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FRED'K A. CASTLE, M.D.,

LATE PHYSICIAN TO THE PRESBYTERIAN HOSPITAL AND LECTURER ON PHARMACOLOGY, BELLEVUE HOSPITAL MEDICAL COLLEGE; MEMBER OF THE COMMITTEE OF REVISION AND PUBLICATION OF THE PHARMACOPŒIA OF THE U. S. OF AMERICA.

EDITOR

CHARLES RICE, PH.D.,

CHEMIST OF THE DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION; CHAIRMAN OF THE COMMITTEE OF REVISION AND PUBLICATION OF THE PHARMACOPŒIA OF THE U. S. OF AMERICA.

ASSOCIATE EDITOR

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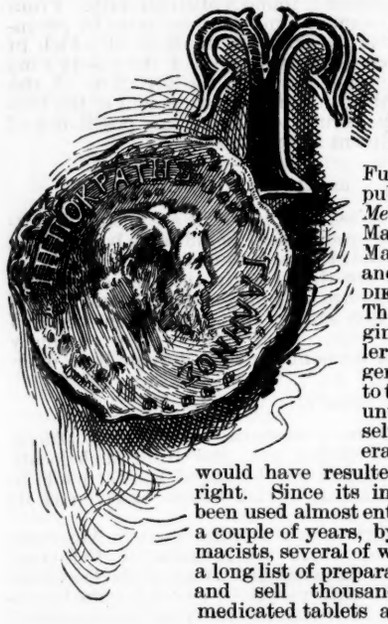
[ORIGINAL COMMUNICATION.]

NOTES ON PRACTICAL PHARMACY.

Fuller's Tablets.



THE following description of a novel and valuable pharmaceutical method is based upon two papers by Dr. Robert M. Fuller, of New York, published in *The Medical Record* of March 9th, 1878, and March 25th, 1882, and in NEW REMEDIES, for March, 1878. The method was originated by Dr. Fuller, who has very generously given it to the public and voluntarily denied himself the very considerable income which would have resulted from a patent-right. Since its introduction it has been used almost entirely, until within a couple of years, by New York pharmacists, several of whom manufacture a long list of preparations of this class and sell thousands of bottles of medicated tablets annually. Within about two years, pharmacists in other cities have undertaken their manufacture, and there is now a very considerable demand for accurate information respecting the method and apparatus.

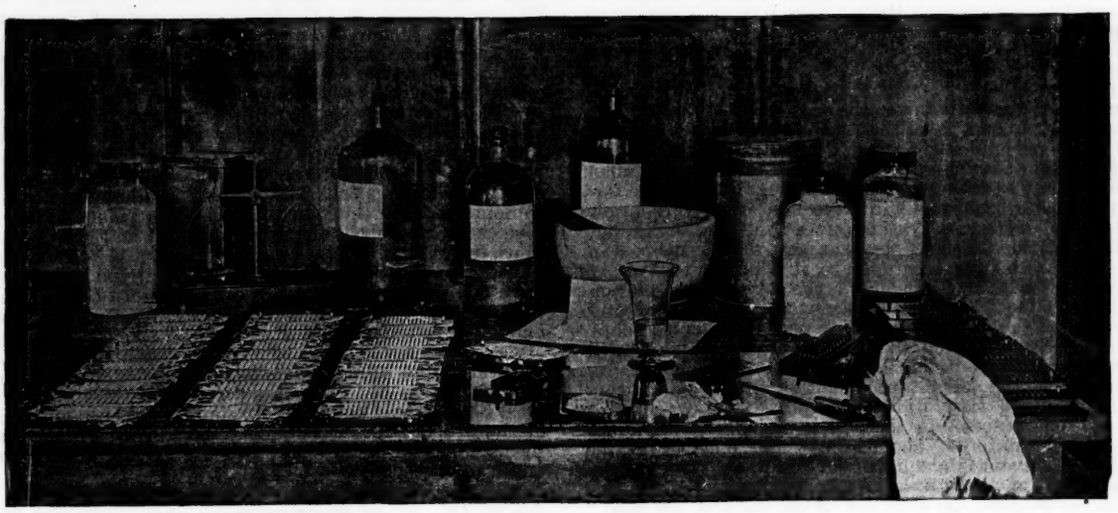
The essential feature of this form of dose-dispensing is a minute lozenge or *tablet*, as it is called, made by pressing a paste into perforations made in a plate of glass, metal, hard-rubber, or any other available and suitable material. These holes are of uniform diameter and the plate of uniform thickness in each instrument, and the number of holes to each plate is determined by their relative size. The plates made thus far contain from fifty to two hundred and fifty perforations, and the tablets made by their use weigh from a half grain to four grains, although larger tablets can readily be made with the aid of appropriate plates. To facilitate removal of the tablets from the perforations, Dr. Fuller uses a similar plate in which are corresponding perforations holding pegs somewhat longer than the thickness of the plate in which the tablets are formed. Still longer pegs at the ends or corners serve to secure accurate registration, and when the filled plate is guided by the long pegs, the short pegs lift the finished tablets out of their matrices, and the process of removal is accomplished. Each peg supports a corresponding tablet in a position which favors rapid drying, and the tablets are allowed to remain thus supported until they are hard enough to endure handling.

Early in the development of this method, Dr. Fuller had constructed a variety of appliances having this principle as a basis, one of which consists of an arrangement of wedges which are made to approach or recede by means of a double screw, and regulate the distance to which the pegs will penetrate the holes of the upper plate. The apparatus is found, however, to be impracticable, and nothing yet suggested is as efficient or convenient as the plate illustrated in Fig. 2, and described above. In using it, the plate is laid upon a pill-tile or plate of glass, and the paste is spread upon the upper surface and forced into the holes with a spatula. It would be possible to dispense with the pegged plate and to allow some varieties of tablet to harden in the holes, and be removed subsequently by tapping the plate or by forcing them out with a rod of suitable size. Owing to the adhesive nature of other varieties, this would be a comparatively tedious process, and the use of a pegged plate is practically the best plan in all cases.

The composition of the paste or mass varies with the special indications. To quote Dr. Fuller's words:

"The soluble tablets generally consist simply of certain medicines made into soluble paste with the aid of sugar of milk and alcohol or water. In some instances, however, it is found necessary to employ an excipient more adhesive than sugar of milk. But in such cases, of course, as little of such excipient as possible should be used, in order that the tablet may be readily soluble in the mouth or stomach, or diffusible in a spoonful of water, and thus administered.

"The tablets are intended to embrace any medicines that can be made into a paste which is not too tenacious, such as fluid extracts or sugar of milk containing any percentage of a chemical, such as arsenious acid, sulphate of morphine, muriate of ammonia, etc., "and can be made with alcohol of 85%, or over, and pulverized acacia, according to the adhesiveness required. When fluid extracts are used, one minim or less can be mixed with a compound of two grains or less of sugar of milk and pulverized acacia and then made into a paste with 85% alcohol."



A tablet-maker's apparatus.

Tablets made of sugar of milk and 85% alcohol, or with water alone, and called by Dr. Fuller *tablet saturates*, are used for subsequent medication with fluid extracts or tinctures. The method of medication consists in arranging a number of tablets upon a glass plate either in contact or separated. In the former case the fluid extract or solution is poured upon them in the proper proportion, and on allowing them to remain covered for a time the medicinal solution becomes evenly distributed through the tablets. In the latter case the appropriate quantity of solution can be dropped, by means of a pipette, upon each tablet. After saturation is accomplished, the tablets are to be uncovered and the alcohol or water of the solution allowed to evaporate.

Another variety of paste or mass can be made by thoroughly triturating mineral, metallic, or vegetable substances with milk sugar until complete subdivision and mixture of the medicinal element have been accomplished, when the paste is made with the aid of water or alcohol

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and treated as above described. This method is unquestionably the best in existence for the dosage of active remedies, and for this purpose is certain to become generally employed.

An essential feature of the tablets made of drugs with the appropriate quantity of milk sugar is *prolonged trituration*, whereby the active principle is minutely divided and distributed uniformly through the mass. We shall have something to say in a subsequent paper respecting this process and appliances which render it thorough with economy of labor.

The circumstance which has thus far interfered most with the general introduction of this process is the fact that the manufacture of the tablet plates is *not* protected by a patent. At present it is difficult to find any one to undertake their manufacture, for the reason that to make it profitable it needs to be done on a large scale, and there is a very natural disinclination to invest money in materials and machinery for making an article which may have but a limited demand, while there can be no limit to

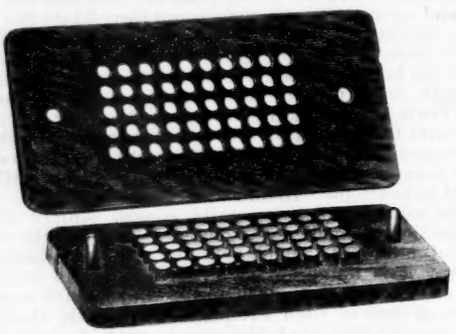


FIG. 2.—The tablet plate.

the competition which will be stimulated after the article has been introduced at an expense for advertising, etc. Some of the makers of tablets in New York have been obliged to go to considerable expense in order to obtain the necessary plates, but the general demand has lately become so considerable as to lead A. G. Newman, of 1180 Broadway, makers of builders' hardware, to undertake their construction, and many of the plates used by those who have lately commenced the manufacture of tablets have been obtained from this source.

PILL SATURATES.

In the course of his paper on *tablets*, Dr. Fuller mentions some valuable points in the practical usefulness of the No. 60 homœopathic pills of cane-sugar as vehicles for the active principles of watery, alcoholic, and ethereal solutions. The advantage possessed by the milk-sugar tablet as compared with these pills of cane-sugar is that the former is more porous and will take up a relatively larger proportion of drug. The facts mentioned by Dr. Fuller, in connection with the cane-sugar pills, may be utilized in the medication of tablets, and are, in effect, as follows:

When alcohol of 80% or more is the solvent, the solution to be introduced into the cane-sugar pill can be of any strength. The principle applies also to other solvents, such as ether, in which sugar is insoluble, and which will evaporate on standing. When water, or alcohol of *less* than 80% is the solvent, the solution should be concentrated to avoid dissolution of the pills. The capacity of absorption possessed by the pills is varied, the maximum being one minim to about fifteen and one-half grains when the solvent is alcohol of 80% and over. The proportion, however, is not so large when concentrated aqueous solutions or alcoholic solutions of less than 80% are used."

[To be continued.]

Medicated Gelosin.—Repeated reference has been made to the advantages which agar-agar possesses over gelatin as a basis for suppositories and pharmaceutical preparations. At one time it appeared that the substance would become popular, but it had been almost forgotten until it came into use recently for bacteriological work. We observe that at a recent meeting of the Société de Thérapeutique, Paris, M. Guérin read a communication on Gelosin, which is obtained from the Japanese alga. It is in the form of whitish films. It mixes easily with substances soluble in alcohol and water, and is of great value in preparing suppositories. It gradually contracts and expels the water and medical substances it contains, which are thus spread over the surface of wounds or cavities, in which it is placed in any form. M. Guérin showed specimens of cylinders and slabs of gelosin, containing camphor, creasote, sulphate of zinc, cocaine, tincture of belladonna, iodoform, corrosive sublimate, carbolic acid, etc. In making preparations from gelosin, it is first, like gelatin, immersed in its own weight of hot water until soft; the therapeutic agent is then incorporated, and when the mixture becomes as thick as syrup it is poured into moulds. The liability of the base to contract may be counteracted by adding glycerin to the mass, just as in the case of gelatin suppositories.—After *Chem. and Drugg.*

[ORIGINAL COMMUNICATION.]

PHARMACOGNOSTICAL NOTES.

BY PROF. JOS. SCHRENK,

Of the College of Pharmacy of the City of New York.

TARAXACUM.

OUR authorities state quite positively that taraxacum root contains a central wood-cylinder *without any pith.** In a very large number of roots taken from various commercial samples I found a distinct pith. From ten to fifteen fibro-vascular bundles surrounded by parenchyma tissue include the pith, the diameter of which in some instances exceeds the thickness of the woody zone several times. In other respects, the structure of the roots was normal, the concentric arrangement of the laticiferous ducts in particular excluding any possibility of mistaking the specimens for chickory, etc.

BELLADONNA.

Of this root it is stated that bast-cells are entirely wanting in it.† In a few specimens, I found some bast-cells in close proximity to the cribrose tissue, either singly or in pairs. Their walls are thickened in the manner of most bast-cells, and canals are sparingly seen in them. I had to remove the amylum and to stain the sections before I could detect these cells. Their number is exceedingly small, which might account for their having been overlooked.

VERATRUM VIRIDE.

I always found our veratrum in swampy places, along water courses, ditches, etc., and from such localities it is also reported in our botanical books,‡ while in Maisch, "Materia Medica," "rich woods" is given as its habitat.

No characters are given by either European or American pharmacognocists by which the rhizoma of Veratrum viride might be distinguished from that of the European Veratrum album. Flückiger says: § . . . "it is quite impossible to distinguish their root-stocks from one another." The endodermis of Veratrum viride consists of cells which have their *inner* and radial walls much thickened. As Flückiger states‖ that the endodermis cells of Veratrum album have their *outer* walls more thickened than their inner, I expected to be able to distinguish the two species by this difference. A close examination of Veratrum album, however, proved that the endodermis cells of this species have the same structure as those of Veratrum viride, and we have to consider the word "outer" in Flückiger's standard work, no doubt, as a misprint for "inner." The only difference I could find in the structure of the endodermis cells was, that in V. album their walls were much more thickened than in V. viride, and in the root the lumen left by the thickening had, in the cross sections, the form of a U in V. viride, and of a V in V. album.

Many samples of the drug sold as Veratrum viride that have come under my notice were *very much lighter* than those of the European species; they were not compact and hard, but of a decidedly loose and spongy structure. My students never failed to recognize such specimens as V. viride from among root-stocks of both species, after their attention had once been directed to this difference. Most likely, these light root-stocks had not been gathered at the proper time; it remains to be learned whether (as seems to be probable) they are of inferior quality and ought to be rejected.

CYPRIPEDIUM PUBESCENS.

According to Gray ¶ and Maisch,** this species of Cypripedium grows in "bogs and low woods," and "swampy places." I have frequently found it well established in rather dry woods on hillsides, although not so luxuriant as in wet places.

Maisch (l. c.) says of the rhizoma: "nucleus sheath absent." I have examined numerous specimens, both of the commercial drug and of the living plant which I gathered myself, and in all of them I found the endodermis developed distinctly enough to leave no doubt about its presence. In some cases, the endodermis can be detected only with difficulty, because the walls of its cells are hardly thickened at all, and might easily be mistaken for cells belonging to the adjoining "ground tissue," Fig. A. But by applying the proper reagents (chromic acid, iodine, and sulphuric acid, or double staining after bleaching), we can very plainly see the cutinized radial walls characterizing all endodermis cells.

In most cases, these tests are not necessary, for usually the endodermis cells have their walls much thickened, either all around, Fig. B, or on the inner (centripetal) and

* Berg, "Anat. Atlas," etc., p. 12, plate viii.; Flückiger, "Pharmacognosie d. Pflanzenreichs," p. 407.
† Berg, l. c., p. 23, plate xiii.
‡ Gray, "Manual," p. 525.
§ L. c., p. 310.
‖ L. c., p. 308.
¶ L. c., p. 512.
** L. c., p. 124.

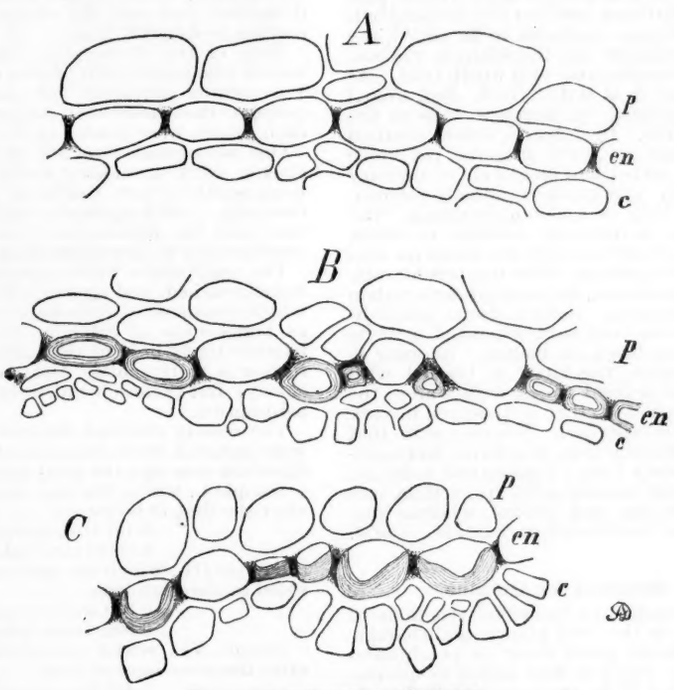
radial sides only, Fig. C. In the former case, thick-walled cells are freely intermingled with thin-walled ones; in the latter case, there are only few cells with thin walls.

From the foregoing it appears that the structure of the endodermis in the rhizoma of Cypripedium varies greatly, a rather remarkable fact if we remember that upon the constancy of the shape and the mode of thickening of the endodermis cells specific distinctions have been based, *e. g.*, Mexican and Honduras sarsaparilla. I might add that I collected root-stocks of Cypripedium with very much thickened endodermis cells in a boggy wood, while some plants collected in dry woods, and transplanted to a city yard several years since, as well as some specimens of the commercial drug, had thin-walled endodermis cells. This seems to be contrary to Schwendner's theory,* according to which plants growing in very dry places have thick-walled endodermis cells, and vice versa. The exception taken by Schwendner for hydrophilous plants exposed to temporary drought cannot be applied to my case.

Note on "Insect Powder."†

THE Dalmatian Insect Flower, *Chrysanthemum cinerariæfolium* B. et. H., known also by its Dalmation name *buhach*, has been cultivated for several years past on a large scale in certain portions of California, the cultivators being Dalmatians who have settled there.

The best soil for this plant is loam with a large proportion of sand. This kind of soil is particularly suitable for sowing, but it should be well mixed with old dung. The seed itself is mixed with sand and distributed over the soil as uniformly as possible, after which the soil is raked to the depth of about half an inch, and then gently pressed by passing a roller over it. Until the plants spring up, the beds must be irrigated every evening, unless it rains. But great care must be taken not to overdo it, as the plant is very sensitive, throughout its whole life, towards undue moisture of the soil. After the plants have sprung up, they need not be watered more than twice a week. Weeds must be kept away until transplantation takes place, which occurs when the plants are about six inches high. It is then set out precisely like cabbage, about twenty inches distant from every neighbor, and afterwards needs no further attendance.



ENDODERMIS OF CYPRIPEDIUM PUBESCENS.
× 420, reduced to ⅔ of original.
en, Endodermis cells; the dark shade between the cells marks the strongly cutinized radial walls (the walls seen to be slightly cutinized, however, all around). *p*, Parenchyma toward surface of rhizoma. *c*, Tissue toward centre.

Buhach is a biennial [?] plant, therefore it flowers in the year subsequent to that of sowing. Just when the flowers are about to open, they must be cut off, as they contain the largest amount of essential oil in this condition. The cut flowers must be carefully guarded against dampness, and must be dried in the shade, never by exposure to the sun or to artificial heat. After the period of flowering is over, the plants are cut off four inches over the ground, reduced to powder, and this powder mixed with that of the flowers, in a proportion not exceeding one part of the former to two parts of the latter. [This is the statement made by the author of the work from which we quote. It is made in such a manner that it appears to be the regular process followed, there being no intention at all to utilize the flowers alone.] The finer the mixed powder of herb and flowers is, the more effective will it prove to be. If any one wishes to prepare the powder himself, and does not possess a suitable mill, he may use a mortar covered with leather. The quantity thus worked in a mortar should, however, not exceed about one pound, to avoid heating the powder. When the substance appears to be comminuted, it is transferred to a fine hair-sieve, and the refuse remaining on it put back in the mortar. It is very difficult to reduce the stems to powder in this manner, which—as the author naively but truly states—is not a serious disadvantage, as the flowers are the most valuable portion of the plant. Insect powder should be preserved in glass or metallic vessels, which should be closed air-tight.

Insect powder may be used either in form of dry powder, or by fumigation, or in form of alcoholic extract, or mixed with water, or in form of infusion.

The work from which we quote advises to make the first-mentioned method of using insect powder cheaper by mixing it with flour, saw-dust, or wood-ashes, which do not interfere with its insecticidal powders. [Of course, this may be done by the user of the powder, provided the dilution is not carried too far.] The mixture ought to be made at least twenty-four hours before it is to be used, and it should meanwhile be kept in air-tight vessels. Experiments have been made which show that such mixture acquire greater efficacy by keeping. It was found, for instance, that a mixture of one part of insect powder and eleven parts of flour, applied immediately after being mixed, to certain caterpillars, was just sufficiently strong to kill them. But the same effect was produced by applying to them a mixture of one part of insect powder and twenty-two parts of flour which had been mixed twenty-four hours before. [The explanation of this may be that the volatile oil of the flowers probably becomes more thoroughly diffused through the mixture in the course of time.—ED. AM. DR.]

The employment of insect powder by way of fumigation is exceedingly effective, particularly in closed rooms, where the dense smoke produced by it, which is not at all disagreeable to human beings, soon kills all insects, particularly those having tender or soft bodies. This method is especially valuable for the purpose of killing mosquitoes in rooms. All that is necessary is to place a burning coal into a spoon or other receptacle, and to sprinkle insect powder upon it. In larger rooms, the spoon may be carried about, or several may be thus used in order to distribute the fumes properly. After a few minutes, every mosquito will be found dead; and, if the fumigation be kept up for about half an hour, the same fate will have overtaken also—according to the author—any fleas that might have been present. [He says nothing of bed-bugs, but it is certainly worth while to try the above method for getting rid of this troublesome pest, which is spreading gradually into houses of opulence and comfort, where such disgusting visitors had been previously unheard of.—ED. AM. DR.]

The third method of employment in form of alcoholic extract is the most advantageous for use in the fields and garden.

The principal drawback connected with the use of insect powder is this, that its effect, when applied in substance, is only certain when it comes in actual contact with soft-bodied insects. In the case of hard-bodied or haired insects it often produces only stupefaction for a time. This drawback is to a great extent removed by employing the alcoholic liquid extract, which may be prepared by percolation, or, according to the author, by macerating one pound of insect powder for four or five days with two pints of alcohol in a warm place, then separating the alcohol and adding one pint of glycerin. This liquid extract is to be diluted with water before use. For hard-bodied insects it may be diluted with twenty parts, for more sensitive insects with thirty to forty parts of water. If it is to be used out of doors, it is self-evident that it should not be applied while rain is threatening, nor during the hot part of the day. The best time is early in the morning while the dew is still on the ground or during cloudy days.

If a decoction of insect powder is desired, this may be readily made by pouring boiling water upon it and macerating, in a covered vessel, until cold.

In many cases a simple mixture of insect powder and water will be found quite effective. A good proportion is, according to the author, one-half ounce to two gallons. [This seems to be altogether too weak.]

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* "Die Schutzscheiden und ihre Verstärkungen," p. 57.; cf. Haberlandt, "Physiol. Pflanzenanatomie," p. 246.

† Abstract of a chapter on this subject in: "Die Tropische Agrikultur. Ein Handbuch für Pflanzer und Kaufleute." Von Heinrich Semler in San Francisco. 8vo. Wismar, 1886, Vol. I., pp. 207.

The decoction, however, is much more effective. It must be used as soon after preparation as possible, and at a time when its effect will not be interfered with by the condition of the atmosphere.

It should be stated that the majority of insects do not die immediately after having come in contact with insect powder or one of its preparations. They are at first only stupefied, but death usually ensues after a few hours and in some cases not until after several days.

Test for Urethan.

A VERY pretty test for this new hypnotic is proposed by M. Jacquemin, in a note communicated by M. Berthelot to the Academie des Sciences. An aqueous solution of urethan (four grains to one ounce) may be used. To a little of this, in a test-tube, add an equal bulk of mercuric chloride solution, then, drop by drop, solution of potassa or soda. The first drops have no effect, but by-and-by a white gelatinous precipitate is formed, and when a certain point is reached, the contents of the test-tube become quite gelatinous when shaken up, the appearance of the viscous mixture resembling starch or tragacanth mucilage. If this be boiled, the precipitate dissolves almost to a clear liquid, and on cooling becomes milk-white, the precipitate very slowly settling to the bottom. If the test be reversed, the potassa being added to the urethan solution first, but not in excess, the mercuric chloride has no effect; if, however, more alkali be now added, the same result as before is experienced. If alkali be added in excess in the first instance, then mercuric chloride, a yellow precipitate of mercuric oxide forms and is at first redissolved, but as the mercuric solution continues to be added, the precipitate becomes permanent and the solution viscous. These tests are very interesting and well worth trial. As to the delicacy of the test, it is stated (*Brit. Med. Jour.*) that urethan was precipitated by mercuric salts in the proportion of 1.50 per 1,000. In order to detect urethan in weaker solutions, such as .00005 gramme per cubic centimeter, potassa was added and bichloride of mercury drop by drop. A yellow precipitate gradually formed, and again dissolved so long as urethan remained. The test has an application in detecting urethan in urine. Nitrate of mercury and acetate of mercury acted on urethan, in the presence of potassa, like the perchloride. These two salts precipitated urea, but precipitated urethan only in the presence of potassa. Natural urine, much diluted and treated with mercuric salt, deposited a white precipitate which became black on boiling. In order to extract urethan from urine, the latter is treated with ether, and then washed several times with water; the residue from the evaporation of ether is dissolved in very little water and treated as described. We may state that ammonia does not give the reaction, as it forms ammoniochloride of mercury in every case. Potassa and soda are, however, effective. These alkalies split up urethan into ammonia, carbonic-acid gas, and alcohol, whereas ammonia decomposes it into alcohol and carbamide.—*Chem. and Drugg.*

Thalleioquine Reaction for Quinine.

ONE of the most prominent and handsome reactions of quinine (and quinidine) is the well-known thalleioquine test, that is the magnificent green color (or precipitate) produced when chlorine water is first added to quinine or one of its salts, and a little ammonia is afterwards added. As chlorine water cannot be kept long in stock, and it is not always convenient to make it, bromine water may be used instead. But even this may be unavailable. Dr. Vulpius thought it, therefore, possible to utilize one of the several rapid methods of producing chlorine gas, the most convenient of which is that of pouring hydrochloric acid upon chlorate of potassium. He found this, indeed, to answer the purpose very well, provided certain precautions are carefully observed. It appears necessary, namely, that the acid should be used in excess and no trace of the chlorate of potassium remain undecomposed, before using the liquid for the test.

If the following method is followed, the test will always succeed. (Dr. Vulpius' statement is confirmed by Mr. Otto Kaspar, of Genf, the editor of the *Schweizer Wochenschrift für Pharm.*) Into a dry test-tube holding about 25 C.c. (nearly 1 fl. oz.) put 0.02 Gm. (or ab. ¼ grain) of potassium chlorate, and 4 drops of officinal hydrochloric acid (the U. S. acid is a trifle stronger than the German, but answers perfectly). Next add 2 drops of water and warm in a water-bath or near a flame until the yellow color of the liquid ceases to become darker and no more gas is evolved, which will require only a few seconds. Now add 5 C.c. of cold water and shake thoroughly. The chlorine gas still contained in the cylinder will thereby become absorbed, and a sufficiently strong chlorine water will be produced.

The quinine salt in question is then tested as follows. Transfer 0.01 Gm. (⅛ grain) of it to the test-tube containing the chlorine water and shake well. Dilute with 5 C.c. more of water, and then add cautiously 1 C.c. of water of ammonia, so that the latter will float on top. At once there will be an intermediate layer of a deep-green color which will gradually extend downwards through the liquid.—*Pharm. Centralh.*

The Effect of Shaking upon the Yield of Morphine when Using the Lime Method.

EUGEN DIETERICH recently read an interesting paper before the pharmaceutical section of the Convention of Naturalists and Physicians at Berlin, in which he showed the differences in morphine obtained from opium, when using Flückiger's test, according as the liquid was well shaken or left at rest.

He states that he macerated 96 Gm. of opium with 960 Gm. of water for 24 hours, and collected 12 portions of filtrate, each weighing 42.5 Gm. and representing 4 Gm. of opium each.

[The abstract of the paper before us does not state how the author arrives at the conclusion that 42.5 Gm. of the filtrate represent 4 Gm. of opium. From the paper of Messrs. Wrampelmeier and Meinert, published in our last volume, p. 203, it appears that the filtrate from a macerated mixture of opium and water, in the above given proportions, has the spec. grav. 1.01265–1.01270, say as a mean 1.01268. Consequently, the 42.5 Gm. of filtrate should measure 41.96 C.c. Messrs. Wrampelmeier and Meinert found that when 70 C.c. of water are macerated with 7 Gm. of opium, the 70 C.c. expand to only about 70.29 from the quantity of dissolved matter. Hence, the 960 Gm. (practically equal to 960 C.c.) of water taken by Dieterich should expand to only 963.98 C.c., and accordingly, 4 Gm. of opium would be represented, not by 42.5 Gm. (=41.96 C.c.) of filtrate, but by 40.67 Gm. (= 40.166 C.c.), which is the twenty-fourth part of 963.98. (Compare, however, the correspondence on p. 12 of this number.)—ED. AM. DR.]

Each of the 12 samples of filtrate thus taken by the author was mixed with 12 Gm. of alcohol, 10 of ether, and 1 of water of ammonia, and these were then arranged in pairs, so that there were *six* sets of samples of two vials each, which were treated in the following manner:

One set of vials was left at perfect rest, another was shaken every 4, another every 2 hours, another every hour, another every half-hour, and one was shaken continuously. Shaking could take place only during daytime, and the filtrates, even of the shaken samples, had subsequently to be left standing at rest.

The precipitates were separated by filtration every 12 hours, weighed, and ignited. The residue left on ignition, which consisted of carbonate of calcium, was calculated as bimeconate of calcium. This salt was believed to be more likely present than the simple meconate, as the former is more soluble, and the separation took place so slowly. But Dieterich expressly states that this is only an assumption.

The results obtained showed that the samples which were agitated most deposited the most morphine, but at the same time also the most lime.

Sample I., which was not shaken at all, had separated after the first 12 hours:

0.107 Gm. morphine, and
0.00148 Gm. calcium salt.

Sample III., which was shaken every 2 hours, had separated in the same time:

0.330 Gm. morphine, and
0.00296 Gm. calcium salt.

Sample VI., which was shaken continuously, yielded after the same lapse of time:

0.439 Gm. morphine, and
0.0207 Gm. calcium salt.

From these results the following fact is rendered evident:

If the prepared mixture is allowed to stand at rest, the precipitate separates slowly, deficient in quantity, and containing the smallest amount of lime. On the other hand, the precipitates form the more quickly, abundantly, and rich in lime the more the liquid has been shaken.

The question now arises, how may this possible discrepancy in yield, which may amount to as much as 3 per cent (according to Dieterich), be avoided? Certainly it will not do hereafter to allow the mixture to stand perfectly at rest. But again, constant shaking is impossible without special appliances. It will be advisable to give precise directions which may render the result more uniform.

Dieterich also calls attention to Dr. Geisler's admonition of several years ago, to avoid using as a precipitant of morphine a substance in which the alkaloid is not insoluble (meaning, among others, lime).—After *Pharm. Zeit.*

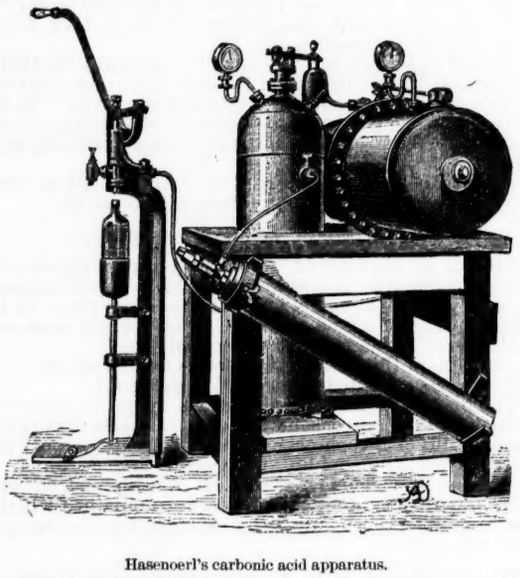
Preparation of Pure, Crystallized Glucose.—The process for obtaining pure, crystallized glucose, patented by Seyberlich and Trampedach (French Pat. 169,505) is as follows:

Starch is converted into sugar by treatment with pure nitric acid and the requisite amount of water. The acid is then neutralized with chalk, and the sugar solution concentrated *in vacuo*, to a density of 33–34 Baume. It is then allowed to crystallize, and the crystals separated from the mother-liquid by centrifugal dryers. The mother-liquid is freed from lime by sulphuric acid which, at the same time, sets free the nitric acid, and the resulting acid liquid, separated from the sulphate of calcium, may again be used for converting fresh starch into sugar.

APPARATUS FOR UTILIZING LIQUID CARBONIC ACID.

THE apparatus here illustrated is recommended by Hasenoerl (*Zeitsch. d. Oester. Apoth. Vereins*) for the employment of liquid carbonic acid in the preparation of carbonated beverages.

It consists of an expansion vessel and a mixing cylinder. The former, which is connected with the receiver by a lead pipe, is provided above with a manometer as well as a safety valve. A second tube connects it with the mixing cylinder—the large cylindrical vessels represented as lying upon its side—which is also fitted with a manometer and safety valve, and has, besides, an opening for introducing the liquid to be charged with the gas, and a stirring arrangement to mix the contents. A pipe of block-tin, somewhat larger than the others, leads to the filling and corking apparatus, by means of which the carbonated liquid is drawn off into bottles. The mixing cylinder is also provided with a pet-cock for permitting the escape of atmospheric air which is expelled from the water when it is first charged with the gas.



Hasenoerl's carbonic acid apparatus.

The liquid carbonic acid is contained in the strong iron cylinder shown alongside of the table in an oblique condition. This is prepared by developing carbonic acid gas in the usual manner without pressure, drying it, and then compressing it in the reservoir by pumping it into it. The reservoir, which is of wrought iron and capable of standing a great pressure has, at one end, an inlet guarded in the interior by a valve which permits opening only inwards. After a little of the gas has been pumped in, a stop-cock at the other end is opened to let out the air. This is done several times, in order to make sure that all the air has been expelled. Then the gas is pumped in continuously, until the manometer indicates a certain pressure. During the process of filling, the cylinder is surrounded with ice.

WASHING PRECIPITATES WITH THE LEAST POSSIBLE ACCESS OF AIR.

UPON a cylinder of suitable size, a well-ground glass plate is laid which must fit air-tight. The plate has three perforations. One (*a*) is intended to receive a stoppered funnel; another (*b*) carries a tube, bent over in its outside portion and entering a vial containing a solution of caustic potassa, a small pointed glass tube being fixed in the neck of the vial to establish communication with the air, and so adjusted that any air which will enter the apparatus is compelled to pass over the surface of the potash solution so as to be deprived of carbonic-acid gas. And the third orifice (*c*) is intended to hold a siphon-tube provided with a stop-cock (*d*) at the end. All three attachments are held in place by perforated rubber corks.

The precipitate having been produced by mixing the requisite solutions in the jar, the cover is adjusted and precipitate allowed to subside. The siphon-tube is then depressed sufficiently to permit the withdrawal of the supernatant liquid without disturbing the precipitate. [The end of the siphon-tube should be turned upwards, as this would greatly help to prevent disturbing the sediment.—ED. AM. DR.]. When enough liquid has been drawn off, the faucet at *d* is closed, and more liquid allowed to run in through the funnel. After the precipitate has again settled, the liquid is drawn off again, and this is repeated until the precipitate has been sufficiently washed. If the precipitate is to be freed from water as much as possible without being taken out of the cylinder, proceed as follows. Lift off the cover and attach to the inner end of the siphon-tube, by means of a rubber stopper, a porous clay cylinder of about the height of the precipitate. Then replace the cover. Connect the outer leg of the siphon absolutely air-tight with one neck of a Woulff's bottle, and the other neck with the air- or filter-pump and set this going slowly. After about one or two hours the liquid will have been aspirated over, being drawn through the porous cylinder which acts as a filtering medium, and the precipitate will usually be found as a cake about the cylinder, whence it may then be easily removed. Practical experience has shown that but traces of carbonic acid are absorbed by it, when operating in this manner.

The liquid used for washing the precipitate may also be used hot. In this case it is only necessary to use such utensils as are known to be able to stand the heat. This apparatus has been designed by Ad. Jolles.—*Zeit. anal. Chem.*, 1886, 369.

CONTINUOUS WASHING APPARATUS.

THE apparatus here described has been devised by P. Raikow for the continuous washing of precipitates either with cold or hot water.

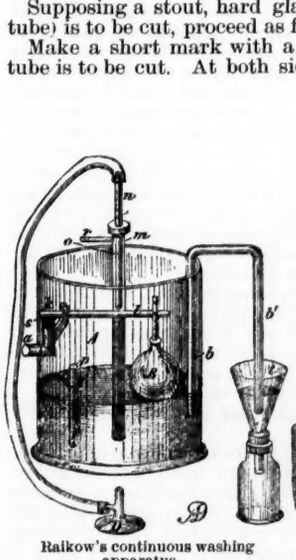
Water enters the vessel *A* through the pipe *a*, and is delivered to the filter through the tube *b*, *b'*. The level at which the water in the filter is wanted to stand is regulated in the following manner: A hollow glass-globe *B* is attached to the long arm of a lever *l*, while the short arm *k* is directly over a rubber plug on top of the inlet pipe *a*. Whenever the water in the reservoir *A* rises beyond a certain level, the empty flask is raised up, and the rubber plug is depressed upon the water-pipe, thus shutting off the supply, until the level of water fills again. If hot water is wanted, heat is supplied by means of a burner, and the temperature regulated by a thermo-regulator placed into the vessel. The gas reaches this through the tube *r* and, after passing the mercury valve in the lower part, reaches the burner through the tube *n*. The latter may be raised or lowered, according as a higher or lower temperature of the water is required. The little orifice at *o* serves for allowing the gas to pass to the burner to keep a small flame burning, when the main supply is shut off. —*Chem. Centralbl.*, No. 41.

Cutting Glass Tubing.

ERNST BECKMANN points out what is surely known to most of those of our readers who have experimented with the various methods heretofore published for cutting glass tubes, or other glass apparatus, that none of them is fully reliable. Indeed, many of them succeed only exceptionally. The before-mentioned writer, however, supplies a method which, he says, is almost infallible. It is not new, as he says, but is only little known.

Supposing a stout, hard glass tube (say, a combustion tube) is to be cut, proceed as follows:

Make a short mark with a file at the place where the tube is to be cut. At both sides of the scratch, at a distance of 1 or 2 millimetres, apply a layer of moistened filter paper, as described further on. Next heat the tube, turning it constantly about its axis, and using a Bunsen burner, or, better still, a glass-blower's pointed flame. The tube will then crack across exactly in the direction of the scratched mark without any lateral or marginal cracks or fissures, which is usually the case if the tube is first heated, and water be afterwards dropped upon the hot place as recommended by some.



Raikow's continuous washing apparatus.

Jolles' precipitate washer.

The paper layer is applied by taking strips of filter paper, of such size that the finished layer will be 1 to 2 millimetres ($\frac{1}{25}$ to $\frac{1}{12}$ inch) high and 2 to 4 centimetres ($\frac{3}{4}$ to $1\frac{1}{2}$ inches) broad. Fold them doubly, lengthwise, soak them in water, smoothen them out, and apply them as directed above, with the folded edge nearest the scratched mark, taking care that every succeeding fold is exactly over the preceding.

When tubes of larger or smaller diameter are to be cut, a larger or smaller layer of paper will be required.

By this method, the thinnest test-tubes, as well as the thickest glass tubes, may be neatly and uniformly cut off. The same may be done with beakers, flasks, and bell jars. If the surface of the glass apparatus is conical or of some other shape, the only alteration that will be required is in the method of applying and fastening the paper layers, for which no general directions can be given.—*Zeitsch. f. Anal. Chem.*, 1886, 530.

Chloride of Gold and Caustic Potassa as a Reagent for Glucose.

C. AGOSTINI has discovered a new reaction of glucose which, according to his statement, would be the most delicate of any so far known.

The reagent is in form of two solutions, *one* a solution of chloride of gold 1 in 1,000, and *the other*, a 20-per-cent solution of caustic potassa. The test is made by mixing in a test-tube five drops of the liquid to be examined (for instance, urine), five drops of the gold solution, and two drops of the solution of potassa. The mixture is then heated to boiling. If glucose was present in the aqueous solution, there will be seen, after cooling, a magnificent violet tint, more or less intense, according to the amount of glucose present. The sensitiveness of the reaction, according to the author, is such that it can detect one one-hundred thousandth part of glucose [in colorless liquids]. In urine, the color is that of red wine, likewise proportioned to the amount of glucose, and the sensitiveness such that it will show 0.1 per cent of glucose, which is sufficiently delicate.

From the examination of a large number of specimens of urine, the author concludes that, with the exception of albumin, none of the normal or abnormal constituents of urine interfere with the reaction. When albumin is present, however, this should be precipitated by boiling, and the test be applied to the filtered liquid.—*Journ. de Méd.* and *J. de Ph. et Chém.*

Contribution to Opium Assay.

IN a paper recently read by Eugen Dieterich (see above, page 4), the author showed that active agitation had much to do with increasing the yield of morphine from any given specimen of opium, when using the lime process. In another paper published in the *Pharm. Centralhalle* of Nov. 4th, the same author describes his method of assaying opium and preparations of opium in detail, but, as will be seen, he does not use the lime process.

I. *Assay of Opium.*

Macerate 6 Gm. of air-dry powdered opium with 60 parts of distilled water during twelve hours, occasionally agitating, then filter. Take 50 Gm. of the filtrate, mix them well with 2 cubic centimeters of normal solution of ammonia (the latter is prepared by diluting 170 Gm. of water of ammonia of 10 per cent, with distilled water to measure 1,000 C.c.) and filter immediately through a ready-prepared folded filter of 10 to 12 C.c. (2 to 2¼ inch.) diameter. Of this filtrate transfer 44.2 Gm., representing (according to Dieterich) 4 Gm. of opium, to an accurately tared, wide-mouthed Erlenmeyer flask, and add 10 Gm. of ether, grasp the flask at the neck, and agitate the contents for about one minute, in a horizontal, circular manner (not violently shaking up and down), so that the aqueous liquid will become completely saturated with ether.

Now add 4 C.c. of normal ammonia, again shake by circular agitation, and set aside for six hours at the ordinary temperature. At the end of this time, transfer the ethereal layer as completely as possible upon a plainly-folded filter of 8 Cm. diameter, add to the residuary opium solution another portion of 10 Gm. of ether, agitate gently a few seconds, and transfer the ether layer again upon the filter.

When it has run through, pour on the water solution without paying any attention to the small crystals adhering to the walls, and then rinse the flask twice successively with 5 C.c. of water previously saturated with ether.

Allow the flask to drain out completely upon the filter, and also the latter to drain completely, then dry both at 100° C. (212° F.), transfer the contents of the filter, by means of a small brush, into the flask, and dry to a constant weight.

When mixing the ether with the liquid extract of opium (which is freed from most of the narcotin by the ammonia), violent agitation must be avoided for the reason that both layers become very easily emulsionized, after which they separate only with difficulty. When the second portion of ammonia (4 C.c.) is added, there will be produced, if the liquid was not fully saturated with ether, a separation of narcotin. But on continuing the circular agitation, this will again disappear, being taken up by the ether.

As the ethereal solution leaves some narcotin in the filter, it would introduce an error to weigh the filter in addition to the flask. Nor is it necessary, as the well-developed crystals of morphine can readily be detached from the paper.

The author quotes the results obtained by this method upon five different samples of opium, each being assayed a varying number of times. The results were as follows:

1. Smyrna I.: 12.20—12.32—12.47—12.12—12.20—12.51—12.40—12.41.
2. Smyrna II.: 13.60—13.77.
3. Smyrna III: 16.15—16.47—16.29—16.40.
4. Guévé: 11.55—11.88—11.95—11.97.
5. Saloniki: 16.10—16.25—16.03—15.95.

Each yield of morphine was examined for lime and nicotin, and found free therefrom. Nor was it possible to find the slightest traces of morphine in the nicotin which had been extracted by the first neutralization with ammonia. The figures, in each case, agree remarkably well, and the whole process ran its course smoothly and without a hitch.

II. *Assay of Extract of Opium.*

Dissolve 3 Gm. of extract of opium in 42 Gm. of water, allow to stand one hour, then mix with 2 C.c. of normal ammonia (see above), and filter through a ready prepared filter, as directed in No. I.

31.7 Gm. of the filtrate represent 2 Gm. of extract.

This filtrate is treated precisely as directed under No. I., being first mixed with 10 Gm. of ether, then with 4 C.c. of normal ammonia, etc., etc.

Special experiments were made to ascertain whether a longer standing at the end of the operation, or an increase of the ammonia would produce a better yield. In the former case, no particular advantage could be discovered, and an increase of ammonia was found positively injurious.

The yield of morphine from an extract kept in stock varied in ten different assays from 22.80 to 23.20%.

III. *Assay of Tinctures of Opium.*

50 Gm. of tincture of opium [any liquid preparation of opium would come under this head here] are evaporated to one-half, then made up with distilled water to the former weight, mixed with 2 C.c. of normal ammonia, and filtered through a ready-prepared filter.

44.2 Gm. of this filtrate represent 4 Gm. of opium.

This is then treated as directed under No. I.

The process applied to a tincture of opium kept in stock (which had deposited some sediment) showed that it contained 1.16% of morphine. Another tincture, freshly prepared from the opium mentioned under No. I. as "Smyrna I." yielded 1.20% to 1.22% of morphine, showing that practically identical results were obtained whether working upon the opium itself or upon the tincture prepared from it.

IV. *Experiments with Normal Potassa and Titration.*

The author wanted to ascertain whether solution of potassa would not do the same services as ammonia. It was found that 3 C.c. of normal solution of potassa did the same amount of work as 4 C.c. of normal ammonia. Yet the results were not as satisfactory as when ammonia was used.

The attempt to assay the extracted opium by titration turned out to be a failure.

V. *Summary of the Advantages of the Above-described Process.*

According to Dieterich, the following may be enumerated as advantages:

1. The process occupies only eighteen hours in the case of opium itself, and seven hours in the case of the tincture, without counting the time required for drying the morphine.

[The process of the U. S. Pharm. occupies considerably less time.—ED. AM. DR.]

2. The simplicity of the process, and its independence from the amount of agitation.
3. A sufficiently sharp separation of constituents.
4. Uniformity in results.
5. Almost total extraction of morphine.

Regarding this important point, the author says:

It has been stated above that no morphine could be detected in the liquid remaining after the separation of morphine. This was ascertained by treating the residuary extract with lime-water and afterwards mixing with chloride of ammonium. Since the liquid finally left behind, when using Flückiger's process, was still found to contain 0.9 per cent of morphine, the following two experiments were made to prove the accuracy of the new method:

0.5 Gm. of morphine dried at 100° C. (212° F.) was dissolved in 1.7 C.c. of normal sulphuric acid and 42 Gm. of water. The solution was mixed with 10 Gm. of ether, just as in assaying opium, then 4 C.c. of normal ammonia were added, and the liquid set aside for six hours. The yield of morphine finally obtained was, in two trials, 95.00 and 95.70, respectively, of the original morphine used, which is quite close.

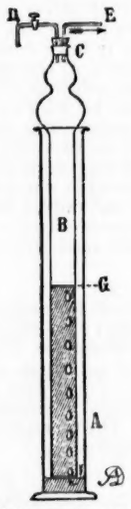
Again, a portion of the "Smyrna No. I." was taken in operation, 50 Cm. of liquid extract obtained as directed under I., treated with 2 C.c. of normal ammonia, and filtered. Every 22.1 Gm. of the filtrate contained 2 Gm. of opium of known percentage of morphine, namely 12.5%. To this portion of the filtrate, 0.25 Gm. of pure morphine,

dissolved in the requisite quantity of acid and water, were added. On treating it now with ether and ammonia, and setting aside for six hours, the following yields of morphine were obtained: 12.57 and 12.42%. While the result is very good, it is still evident that minute quantities of morphine remain in the mother liquid.

SUCTION APPARATUS.

MOST of the aspirators or suction apparatuses, such as the usual filter pumps, have no provision against a sudden release of resistance, in consequence of which they will often act with greatly increased force and rapidity, causing not unfrequently the rupture of a filter. A contrivance to do away with this drawback has been devised by Dr. F. Molnár, which is here illustrated.

The apparatus consists of two glass cylinders, an external wider one *A*, provided with a foot, and an internal narrower one, of the shape shown in the cut. The outer one has a diameter of about 4 Cm., the inner one of about 3 Cm. The neck of the inner cylinder is closed with a doubly-perforated cork, bearing two bent glass tubes *D*



Molnár's suction regulator.

Siwoloboff's apparatus.

and *E*, one of which is provided with a glass stopper. The other is connected with the filter pump.

When using the apparatus, the outer cylinder is charged with water to a height proportionate to produce the desired tension or pressure. When the filter pump begins to act, the water will rise in *B* until the level in *A* will have sunk as far as the lower orifice of the inner cylinder, whereupon a little air will enter, which will restore the equilibrium. The glass faucet is for the purpose of regulating the rate of aspiration or exhaustion.

The author adds that he used the apparatus chiefly for regulating the current of oxygen gas passing through combustion tubes, and that, for such purposes, he found cylinders of a height of 35 Cm. the most suitable.—*Rep. d. Anal. Chem.*, 1886, No. 42.

DETERMINING THE BOILING POINT OF A SMALL QUANTITY OF A LIQUID.

WHEN only very small quantities of a liquid are available, and the boiling point is to be determined, the following method, proposed by A. Siwoloboff, may be used with advantage:

Take a glass tube and draw it out, and close it at the end as shown in the cut. Also take a very small capillary glass tube and prepare one end of it so that the bore is stopped up by fusion a very short distance from the end. This is done by fusing a longer capillary tube at any convenient place, and then cutting it off just beyond this point. The liquid to be examined, which only need be a drop or two, is introduced into the tube A, and the capillary glass tube placed into it, so that a small bubble of air remains confined in the small cavity near the end. An accurate thermometer is fastened to the tube, and the two are immersed together into glycerin or some other liquid used for raising the temperature.

When the liquid in the tube is approaching the boiling point, small solitary bubbles of air are evolved from the bottom of the capillary tube. As the temperature rises, these increase rapidly in number, and when the liquid boils, form a continuous thread of small bubbles of vapor. In this manner the boiling of the liquid may be correctly observed and also properly regulated. When the boiling is in active process, the temperature is read off.—*Ber. d. Deutsch. Chem. Ges.*, 1886, 795.

APPARATUS FOR COATING PAPER, FABRICS, ETC.

THE apparatus here described has been originally designed for the preparation of water-proof paper, but it may be employed also for many other purposes, for instance, the manufacture of antiseptic dressings, such as bichloride or other gauzes, also for making wax or paraffin paper, parchment paper, etc., etc.

The paper or fabric to be impregnated is wound upon a reel *A*, from which it is made to pass over the rollers *F*, *a*, and *a;* the latter two of which are below the level of the liquid with which the paper or fabric is to be treated, and then it is made to pass between two rollers *c*, *c*, where the excess of liquid is pressed out or wiped off. From there it passes between two blowers *R*, *R*, which convey a blast of either cold or hot air, according to the nature of the material with which the fabric is charged. In the case of wax or paraffin, a current of cold air is required; in the case of fabrics impregnated with aqueous solutions, hot air will be necessary, and it may even be necessary to pass the fabric between heated rollers. Finally, it is wound upon the reel *K*. The reservoir *B*, containing the liquid, may be heated by steam if the nature of the material requiries it.—*Dingl. Polyt. Journ.*, 1886, 464.

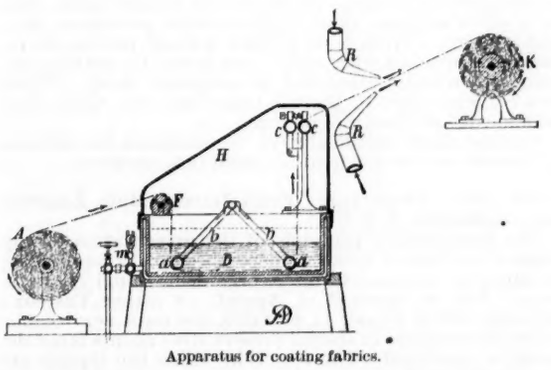
Evaporation and Incineration by Means of Leidenfrost's Drop.

WHEN a drop of water is let fall on a metallic surface heated above 340° up to red heat, the drop will roll off it without apparently coming in contact with it, or, if the surface had the proper shape, the drop will roll about in it, gradually becoming smaller, from the rapid evaporation of the exterior layers, but it will constantly remain surrounded by a layer of air or vapor at high tension, until it is completely dissipated. If the temperature of the metallic surface falls, the drop will eventually come in actual contact with it, when it will instantly and violently boil and be dissipated.

The above phenomenon is of course well known, and particularly so to every housekeeper, who tests the proper temperature of her sad-iron by letting a drop of water fall upon it. A drop of water, under the conditions above described, is known in physics under the title of "Leidenfrost's drop"; or it is said to have assumed the spheroidal condition. Liquids other than water assume the spheroidal shape at higher or lower temperatures, according as their boiling points are higher or lower.

The quiet evaporation from the surface of such drops was utilized some time ago by E. Bohlig, for ascertaining the dry residue of various kinds of liquids. If care is taken to keep the platinum or other metallic vessel at a uniform temperature, and the liquid is admitted to it in well-regulated drops, a large quantity of it may be evaporated without any risk of loss by spattering, such as frequently happens when boiling a liquid down.

Theodore Salzer now draws attention to the fact that the



Apparatus for coating fabrics.

principle may also be applied in determining the incombustible residue (that is, the ash) of any solid organic substances, which melt before they are decomposed or volatilized. The drawback connected with the evaporation of liquids by this method, viz., that it requires considerable time, does not apply in this case.

Supposing *oxalic acid* is to be examined for its percentage of inorganic impurities or ash. Then either the whole of the acid, or portions of it, are put into a platinum capsule raised to a low red heat. The acid is at once converted into a rolling drop which evaporates rapidly, and leaves behind all non-volatile inorganic matters in form of a loose pellet.

As the drops are constantly surrounded by air, the incineration of the residue is very complete. The drop retains its shape and rolling motion, even if the escaping gases take fire, for instance, in the case of succinic acid. It is easy to avoid spattering, which will happen if the capsule is too hot when the drop is introduced.—*Pharm. Centralh.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,828.—**Iodoform Prepared by Electrolysis** (M. S. W.).

The preparation of iodoform by electrolysis is carried on in the "Chemische Fabrik auf Aktien, vormals **E.** Schering," at Berlin, but is protected by patent. The outline of the process, so far as we know, is the following:

50 parts of iodide of potassium are dissolved in 300 parts of water, and the solution mixed with 30 parts of alcohol of 96%. A constant stream of carbonic acid gas is passed through the liquid, and at the same time the liquid is decomposed by electrolysis, iodoform being separated at one of the anodes in a crystalline condition. In place of alcohol, acetone or aldehyde may be used. If a solution of iodide of potassium in 20% alcohol is employed, larger crystals are obtained.

The same method is said to be applicable to the preparation of bromoform or chloroform. But in this case the current of carbonic acid gas is unnecessary.

No. 1,829.—**To Render Windows Opaque** (J. S. & Co.).

A coarse method of "blinding" a window, or rendering the panes of glass impervious to sight, though not impervious to light, is to paint it with a thin coat of paint. A much better method, however, and one which will render the glass apparently of the same appearance as if it had been ground or "sand-blasted," is the following:

Dissolve 50 parts of sandarac and 30 parts of mastix in 500 parts of ether, and add to the solution such an amount of benzin that a portion of the liquid, when spread upon glass, will leave, after drying, a dull uniform coat, causing the glass to appear as if ground. When the solution is to be applied, it is advisable that the window be laid in a horizontal position. If this is not possible, the liquid may be applied by a spray apparatus, taking care that no more is applied at a time than can dry at once. Finally, where a sufficient coat has been produced, a spray of benzin may be passed over it to give it more uniformity.

No. 1,830.—**Removal of Nitrogen Compounds from Caustic Potassa or Soda.** (Nitrogen).

When caustic potassa or caustic soda is to be cast in form of sticks, it is quite a common practice to add to the melted mass a little nitrate of potassium or nitrate of sodium, which have the effect of oxidizing the small quantity of organic substance that may be present, and cause the product to have a handsome white color.

This nitrogen is objectionable when the alkalies are to be used as tests, for instance, in Kjeldahl's nitrogen determination or in the examination of water for nitrogen. According to E. Reichardt, the whole of the nitrogen may be removed by melting the respective caustic alkali, best in a silver crucible, then adding a little powdered zinc, and stirring. From time to time a small portion is removed, moistened with water and tested for nitrates by means of brucine (dissolved in sulphuric acid). When this reagent ceases to become tinted red, the alkali may be regarded as free from nitrogen.

Caustic alkali should always be examined for nitrates or nitrites before it is used for analytical purposes.

No. 1,831.—**Preserving Fruit-Juices, Malt Liquors, etc., in Bottles** (J. B.).

The fundamental principle of the preservation of any organic substance liable to decomposition is based upon an absolute exclusion of micro-organisms (fungi, bacteria, etc.). The old method of Appert, or rather Pasteur's process, will be found, in practice, the most serviceable, when the addition of special preservative agents is not desired or permitted. The vessels in which the liquids are to be preserved must, of course, be thoroughly cleansed before being filled. They are then placed into a tank containing water which must be gradually heated to a temperature varying according to the nature of the contents, but which should reach the boiling point of the water if the contents of the vessels are not injured thereby. The necks of the latter should be closed during the heating by a wad of cotton. The requisite corks should be prepared by boiling them in water containing about six per cent of salicylic acid.

The boiling extracts from the cork a certain bitter substance, while the salicylic acid helps to destroy the vitality of germs. When the heat has been kept up for some time—care being taken to see that the vessels are filled to within a short distance of the cork, some time before the latter is inserted—the bottles or vessels are removed, and the corks carefully inserted the moment the wad is withdrawn. In place of salicylic acid, a solution of bisulphite of sodium may be used for soaking the corks. Immediately before use, each cork is washed in fresh, cold water.

No. 1,832.—**Millon's Reagent** (Meta).

This reagent is used as a delicate test for albumen, albumenoids, urea, and certain other organic substances. It is not usually kept in stock ready-made, but when the reaction is to be made, the several component parts are used in succession. Supposing we have an aqueous liquid containing albumen. First add a solution of acid nitrate of mercury, in rather large quantity, and heat to boiling. Then add an equally large quantity of a solution of nitrite of potassium (which should be as free from carbonate as possible). The liquid, as well as the precipitate, will usually at once assume a red color, but may not do so until it is heated to boiling, when it will become red if albumen was present. The precipitate has generally a darker tint than the solution, and sometimes the precipitate alone is colored.

If the reagent is to be prepared for keeping, dissolve 10 Gm. of mercury, in a flask, with 25 Gm. of nitric acid (sp. Gr. 1.185) previously diluted with 25 Gm. of water, putting the flask in a lukewarm place and agitating occasionally. On the other hand, dissolve 10 Gm. of mercury in 22 Gm. of nitric acid (spec. gr. 1.250 to 1.300) with the aid of heat. Finally mix both solutions.

Another method, recommended by Krukenberg, is the following:

Mix a cold saturated aqueous solution of mercuric chloride with so much nitrate of silver as may be required to leave a little of the mercury salt undecomposed. The filtrate separated from the chloride of silver, and which should be preserved in a glass-stoppered vial, does not, by itself, give Millon's reaction, as it only contains mercuric nitrate, but requires to be mixed, at the time of use, with a few drops of a one-per-cent-solution of nitrite of sodium (or potassium) which should be kept on hand for this purpose. When using the reagent, it is best to boil the liquid which is to be examined, at first only with the solution of mercuric nitrate, of which a copious quantity should be added, and to add afterwards the nitrite solution. Krukenberg recommends to add only a little of the latter. We find this likewise preferable to the direction usually given, viz.: to add both in considerable quantity.

No. 1,833.—**Syrup of Coffee** (M. A.).

Syrup of coffee is an excellent vehicle for many nauseous or bitter medicines. It is an excellent covering of the bitter taste of quinine, for instance. Moreover, it may often be used as a corrigent in elixirs or mixtures containing acrid or bitter resins. The New York and Brooklyn Formulary and the proposed National Formulary make repeated use of it for this purpose. The formula at present accepted by the Committee is the following:

Coffee, roasted and finely ground	8 av. oz.
Sugar	24 av. oz.
Boiling Water	q. s.

Pour boiling water, in successive portions, upon the coffee packed tightly in a percolator, until 16 fl. oz. of percolate are obtained. In this dissolve the sugar by agitation, without heat.

It is recommended that a mixture of equal parts of the commercial varieties of coffee, known as Mocha and Java, be employed for this purpose. The successive portions of water should be added slowly, the previous one being allowed to disappear from the surface; and the percolator should be kept carefully covered.

Our correspondent states that he has recently bought some of the best "Java" coffee, which appears to have, when served as a beverage, a peculiar musky odor. He has not been able to observe anything out of the way on the beans, nor did he notice the odor until the coffee was served.

Regarding this we would say that coffee is undoubtedly one of the most delicate substances known regarding capacity for taking up foreign odors. In this respect it is exceeded only by butter and other bland odorless fats. Though this fact is well known in commerce, and special precautions are taken by shippers of coffee to prevent it acquiring foreign flavors from other portions of a cargo, yet many cargoes are stowed in contravention of the rule. Sometimes hides are carried in the same hold as the coffee; in this case the odor of the former will remain adherent to the beans, even after roasting, though it requires an experienced judge to detect it. Bilge-water also often injures the flavor of coffee. Very fine noses can even distinguish coffee that has been kept in casks made of certain kinds of otherwise unobjectionable wood. The musky odor which our correspondent has detected in his coffee has probably got into it by having been exposed to an atmosphere containing a musky taint.

No. 1,834.—**How to Detect Chloral in the Urine and other Complex Organic Mixtures** (Student).

Chloral appears in the urine either as such, particularly when large quantities have been taken, or as urochloralic acid, which crystallizes in silky needles, is lævogyre, reduces alkaline copper solution, and is soluble in water and alcohol. This acid appears in notable quantity, particularly after a rather long-continued use of chloral, but free chloral is always found alongside of it. The fact that the urine, which contains urochloralic acid, reduces Fehling's

solution might be mistaken for a proof of the presence of sugar.

Chloral may be distilled with the vapor of water or alcohol without decomposition. On heating it with an alkali, it splits into chlorotorm and a formate of the alkali. Upon these reactions is based a simple method of detecting and estimating it.

Mix the urine with a little alcohol (to make the liquid boil more briskly), then render it neutral, if necessary, by carbonate of magnesium, or tartaric acid, as the case may be, and distil until only a syrupy residue remains. Any chloral present is now contained in the distillate. Mix the latter with calcined magnesia and heat it under an upright condenser for about half an hour, whereby the chloral will be converted into chloroform and formate of magnesium. Instead of magnesia, another alkali may be used, but magnesia is, on the whole, preferable. The detection of chloroform is now accomplished by mixing a portion of the distillate with alcoholic solution of caustic soda, then adding a drop of aniline and gently heating, when the penetrating, disagreeable odor of isonitril will make its appearance. As all the magnesia which has not combined with formic acid is still present as an undissolved residue in the flask after the distillation, the contents of the latter may be filtered and the residue on the filter washed, so that all the soluble magnesium salt is in the united filtrate and washings. By determining the quantity of magnesium present, as pyrophosphate of magnesium, an approximate determination of the chloral originally present is accomplished. 100 parts of pyrophosphate of magnesium thus obtained correspond to 298.2 parts of chloral hydrate.

If chloral is present as such in animal liquids, it may also be separated by shaking it out, in neutral solution, with absolute ether, or with acetic ether. Petroleum ether, chloroform, or benzin will not answer the purpose. In order to detect 0.005 Gm. ($\frac{1}{12}$ grain) of chloral hydrate in 75 C.c. (about $2\frac{1}{2}$ fl. oz.) of liquid, it suffices to extract it twice with ether. If only 0.001 Gm. ($\frac{1}{64}$ gr.) is present, no amount of shaking with ether will suffice for extraction.

No. 1,835.—**Fruit Ethers** (S.).

This correspondent wants information regarding the preparation of fruit ethers on a large scale. He has given us information regarding the extent of literature he has consulted, but this does not go far enough. We will, in the first place, point out to him better sources of information:

1. "Die Fabrikation der Aether und Grundessenzen." Von Dr. Theod. Horatius. 8vo, Wien (Hartleben), 1881. This work may be had at any of the large German book importers. It is quite thorough and complete, and contains illustrations. Detailed processes are given for the several fruit ethers, as well as for compound ethers.

In our volume for 1882 (NEW REMEDIES, 1882, p. 118), we gave an illustration of an apparatus recommended by Dr. Horatius for the purpose of making such ethers. But the arrangement is to be understood as merely schematic; the different parts can be constructed or shaped according to the special requirements of any particular case.

2. "Chemisch-technisches Universal-Receptbuch, enthaltend das ganze Wissen der warmen und kalten Destillation." Von C. Hofmann. 8vo, Berlin, 1880 (2 vols.). This also contains very useful information. The fruit ethers, etc., are treated of in Vol. I., p. 371, etc.

3. Muspratt's "Theoretische, praktische und analytische Chemie." (4th edition, edited by Stohmann & Kerl, just commenced.) Vol. I., pp. 36–47. This work may also be had (by subscribing) from the German importing bookdealers.

Regarding butyric acid, we believe that our correspondent would do much better to purchase it than to make it himself. It does not cost very much when purchased by the pound or in larger quantities. Nevertheless, we will indicate a process by which it may be prepared without starting from milk, in which latter case it would be necessary to await the tedious change of lactic into butyric acids. The process is the following (after Fitz; see *Ber. d. Deutsch. Chem. Ges.*, 11, 52).

Mix 100 Gm. of potato starch with two liters of water at 40° C. (104° F.); then add 0.1 Gm. of phosphate of potassium, 0.02 Gm. sulphate of magnesium, 1 Gm. chloride of ammonium, and 50 Gm. carbonate of calcium, together with a trace of the bacillus subtilis, which latter is obtained by taking a handful of ordinary hay, drawing it several times through ¼ liter of water, then straining and boiling the liquid for five minutes. The whole mixture is set aside, at 40° C. (104° F.) for ten days, when there will be produced in it

1 Gm. of alcohol,
34.7 Gm. of butyric acid,
5.1 Gm. of acetic acid,
0.33 Gm. of succinic acid,

the acids being combined with calcium.

The salts having been obtained by filtering the liquid and evaporating it, it is only necessary to decompose them with hydrochloric acid, and to receive the distillate boiling between 150° and 170° C., which may then be further fractioned.

Butyric Ether, at least that which is so called in commerce, but which is not pure, as it contains compound ethers of higher acids, is obtained by heating two parts of butyric acid with two parts of alcohol and one part of sulphuric acid, for a few hours to a temperature of 176° F. (best under an an upright condenser), and then pouring the mixture into water, when the ether will separate as an oily layer. This is washed, dehydrated with calcium chloride, and rectified by distillation. It forms a colorless mobile liquid of sp. gr. 0.900, and boils at 250° F.

There is another method of preparing it, viz.: by starting from a butyrate. This is, however, said to yield a less pleasant product. We have no experience with it, and therefore can give no opinion on this part of the subject.

Our correspondent refers to the "Proceed. Am. Ph. Assoc.," vol. 23, p. 371, for a process for butyric acid, and says this would take too long for his purposes. We would, however, point out that the butyric acid obtained from St. John's bread is not identical with that obtained from butter, or from milk or starch. The former acid (from St. John's bread) is that known in chemistry as isobutyric acid, having the same ultimate composition as the latter, but differing in some of its properties. It has a more agreeable odor that the normal acid (this difference is not so marked in the ethers), and its salts are more soluble.

No. 1,836.—**Artifically Colored Red Wines** (Dr. W. O. F. and A. R.).

The color of claret wine or burgundy may be imitated by means of several aniline colors. Formerly, the only kind available or used for this purpose was fuchsine, or hydrochlorate of rosaniline, which was often assisted in its tinctorial effect by some other modifying agents. At one time, most of the aniline colors were made with the intervention of certain poisonous agents, such as arsenic acid, and, though the coloring matter may not have been used in large quantity, yet the known presence of poison, even in traces, justified the crusade that was waged against them. Subsequently, these same coloring matters were made without the aid of poisonous agents, and, at present, it happens probably but rarely that a poisonous fuchsine is used for such a purpose. Of course, there is another feature connected with this business, namely, the fraud and deception perpetrated by passing off an artificially colored wine for a natural one. But we will leave this side of the question out of consideration here, merely remarking that the practice ought to be condemned under all circumstances.

How to detect fuchsine in red wine is outlined by the U. S. Pharm. under "Vinum Rubrum" as follows: If 50 C.c. of red wine be treated with a slight excess of water of ammonia, the liquid should acquire a green or brownish-green color: if it be then well shaken with 25 C.c. of ether, the greater portion of the ethereal layer removed and evaporated in a porcelain capsule with excess of acetic acid and a few fibres of uncolored silk, the latter should not acquire a crimson or violet color (absence of aniline colors)." This test indicates fuchsine, but is no longer sufficient for detecting certain other red aniline colors which are now even more in use than fuchsine is.

Among the coloring matters derived from coal tar there is one which has received the name *sulpho-fuchsine* (or acid fuchsine, acid rubin, "fuchsine S."). This is prepared (under a patent) from rosaniline and fuming sulphuric acid, whereby an acid is produced which has, temporarily, the name *rosaniline-sulphonic acid*, its true chemical constitution not being yet fully understood. This acid is combined with sodium and it is this salt which is known as sulpho-fuchsine. The latter has a purer claret color than fuchsine, but does not stand dilution as much as the latter. It is very commonly used for coloring wines, and may be detected in the following manner:

Heat 10 C.c. of the suspected wine with a few grains of a mixture of acetate of mercury and calcined magnesia to boiling, filter, and treat the colorless filtrate with a little acid, which will cause a red color if sulpho-fuchsine was present.

Or, shake 50 C.c. of the wine with 5 Gm. of dioxide of lead or peroxide of manganese, filter, and acidulate the filtrate. If sulpho-fuchsine was present, it will turn red; if vegetable, or aniline colors from the so-called azo-series were present (the latter are, however, but rarely used for such purposes), the liquid will remain colorless.

In explanation of the reactions above given, it should be added, that rosaniline is a colorless base. When fuchsine (which is the hydrochlorate of this base) is treated with ammonia, the latter unites with the hydrochloric acid, setting free the base, and in consequence thereof the whole liquid becomes colorless. The separated rosaniline, being soluble in ether, is removed from the mixture by agitation with ether, and upon evaporation will leave it behind. On now introducing a few shreds of uncolored silk (or other animal fibre), and acidulating, the tinctorial substance is restored and the animal fibre dyed red.

It is usual in ordinary technical language and for brevity's sake, to say that fuchsine is the hydrochlorate of rosaniline. In reality, however, it consists of the hydrochlorate of rosaniline and para-rosaniline, the exact relation of which to each other is still under discussion.

No. 1,837.—**Black Coating for Black-boards** (F. S.).

Black-boards, such as are used for writing or drawing

upon with chalk before an audience, should have a dead black, not a glossy surface, and should be very finely granular, so that the surface will readily take the chalk.

A very superior black-board, unlimited in size, except by the available wall-space, may be prepared by having the wall very carefully gone over by a plasterer, so as to make it perfectly level, and to have a coat of so-called hard finish applied to it. The desired amount of surface intended for the black-board itself may then be surrounded by a suitable frame. Upon the inclosed surface, then, some preparation like the following is applied with a brush, care being taken that this is done very evenly.

1.	Lamp-black	9 parts.
	Camphor	8 "
	Shellac	20 "
	Alcohol	100 "

Dissolve the shellac and camphor in the alcohol, and mix the solution intimately with the lamp-black. Apply it quickly and uniformly with a flat brush. A little ether may also be added, but it is not necessary.¶

2.	Lamp-black	20 parts.
	Shellac	30 "
	Sandarac	30 "
	Ultramarine	3 "
	Ether	1 part.
	Alcohol	400 parts.

3. The following is recommended by Gintl:

Dissolve 200 parts of copal in 400 parts of ether; then add a solution of 1,000 parts of shellac and 500 parts of sandarac in 3,500 parts of 90% alcohol; with this mix 150 parts of lampblack, 50 parts of ultramarine, 50 parts of Venice turpentine, and 1,000 parts of *finely* powdered emery. Apply the mixture to the wall-surface carefully, and (if it can be done without doing any injury) set fire to it, which is not very risky as the fire may be put out without difficulty. As soon as the flame has died out, a second coat is applied, which is, however, not ignited, but allowed to dry spontaneously. The surface is then ground with fine sandpaper and carefully washed off with water.

No. 1,838.—**Putz Pomade** (H. B., Brooklyn, N. Y.).

"Is the formula for 'Putz Powder' in the November number similar in make-up to Vogt's 'Putz Pomade;' if so, what is the fatty basis of the powder; if *not*, what is the composition of the pomade as made by this firm?"

It is out of our power to answer this question, as we have no personal acquaintance with the pomade. Perhaps some of our readers may know. If the composition of the pomade—as is likely to be the case—is a secret of the firm, it would be hardly fair to publish it broadcast without authority from them.

No. 1,839.—**"Warner's Safe Kidney Cure"** (Subscriber).

"Please give me the recipe of Warner's Safe Kidney Cure? If you have published it, please give me the back number of Journal."

We have not published it, and do not know the formula

No. 1,840.—**Hospital Formulary** (E. P. M. C., Kansas).

"I have the August and September numbers of the AMERICAN DRUGGIST, containg 'Selections from the Revised Hospital Formulary,' etc., of New York. I wish to be informed how many numbers will be required to conclude the whole of the article, and what month it will end, as I wish to obtain the set?"

The article will be continued as rapidly as we can find space for it in consecutive numbers, but we are unable to say, in advance, in what number it will be concluded.

No. 1,841.—**Troublesome Prescription** (E. C. S.).

"I received a prescription recently, as follows:

"Sodæ Bicarb		℥ v.
Spt. Menth. Pip		℥ iss.
Tr. Capsici		℥ ij.
Spt. Frumenti	ad	℥ iv.

"M., etc.

"On compounding this, it turned a muddy red. Please let me know through the columns of the AMERICAN DRUGGIST the cause of this change, and if it is natural or due to some impurity in some of the drugs?"

We cannot conceive what may have been the cause of the red color and muddiness. It certainly is not due to any normal constituent in any of the ingredients. Had there been any rhubarb added, we might account for it, at least partly. But as it is, we can only advise you to examine your stock of the ingredients. Perhaps the mystery will thus be revealed.

No. 1,842.—**Soap Bubbles** (H. H. S.).

"Please tell me where in the AMERICAN DRUGGIST I can find a formula for a solution for making soap bubbles? I remember seeing it, but am unable now to find it."

We published such a formula a few years since, but we have since tried it ourselves and found it worthless. Mr. James T. Shinn, corner of Broad and Spruce streets, Philadelphia, used to make an excellent solution for this purpose, and supplied with it a suitable metallic pipe for forming the bubbles. A letter addressed as above may secure the desired information.

No. 1,843.—**Syrup of Jardenella** (A. W. R., Ashland, Pa.).

"Will you oblige me with a formula for syrup of Jardenella?"

We are unable to reply to this. Can some of our readers furnish the information?

No. 1,844.—**Castor-bean Culture** (H. L. G.).

"Please to give me all the information (through your Journal) about the castor-bean culture, in regard to the soil, seed, care, etc., and from whence I can obtain the most information on the subject?"

We advise our correspondent to address the Commissioner of Agriculture at Washington, D. C., since some of the annual reports of that office contain, we believe, the information desired.

The second volume of a new work, by Heinrich Semler, of San Francisco, "Die Tropische Agrikultur," 8vo, Wismar (Hinstorff), Vol. I., 1886, will contain full practical instruction on the subject.

No. 1,845.—**Phenol Sodique** (Dr. C.).

The composition of this is as follows:

Carbolic Acid	300 gr.
Caustic Soda	20 gr.
Water	5 fl. drachms.

This is a clear liquid of an alkaline reaction, miscible, with water and alcohol in all proportions. At first it is colorless, but gradually turns reddish or brownish, and still darker. Only about one-seventh of the carbolic acid contained in it can be regarded as being chemically combined.

The first edition of the "German Pharmacopœia" contained this preparation under the title "Liquor Natri Carbolici." The U. S. National Formulary proposes to adopt it as "Liquor Sodii Carbolatis."

No. 1,846.—**Soap Spirit for the Hair** (Dr. C.).

Any kind of saponaceous liquid which will make a lather will serve for this purpose. For instance, the following:

White Castile Soap	2 oz.
Rose Water	8 fl. oz.
Carbonate Potassium	½ oz.
Water of Ammonia	½ fl. oz.
Water	10 oz.
Alcohol	6 oz.

Dissolve the Castile soap in the water with the aid of heat; then add the other ingredients.

Here is another:

Soap Bark	2 oz.
Water	16 oz.

Make a decoction; allow to cool, then strain. Mix the strained liquid with

Alcohol	6 fl. oz.
Rose Water	6 fl. oz.
Water of Ammonia	½ fl. oz.

Salicylated Plaster-Mulls and Salve-Mulls.

THE local application of strong salicylic acid "plaster-mulls" in the treatment of lupus is strongly recommended by Dr. Unna (*Lancet*, September 25th, p. 574). The name "plaster-mull" has been given to a dressing consisting of a very thin sheet of gutta-percha, coated on one side with an adhesive substance containing one or more medicinal compounds, and backed on the other side with mull or undressed muslin. The name of "salve-mull" also has been given to a similar kind of dressing, in which the medicaments are of a more soothing character, consisting of ointments having a basis of suet and lard, spread upon mull. In experimenting with a strong salicylic acid plaster-mull to remove the cuticle, and prepare lupoid tissue for other more destructive agents, Dr. Unna observed that salicylic acid itself exercises a most beneficial influence upon the new growth. The chief drawback is the great and lasting pain caused by salicylic acid when applied to a thin epidermis or raw surface. In order to obviate this, various combinations were tried, but cocaine failed to give relief, while opium and cannabis indica required an hour or two to develop their anodyne effect. The best results were obtained when genuine beech-wood creasote was combined with salicylic acid in the proportion of two parts of creasote to one of acid. Even then there is a painful stage lasting from ten to fifteen minutes, but a previous application of cocaine is sufficiently lasting in its effect to cover this period. The plaster-mulls are prepared in strips one metre long and twenty centimetres wide, the superficial area equalling one-fifth of a square meter. The salicylic acid plaster-mulls used by Unna are of five different strengths, containing respectively 10, 20, 30, 40, and 50 grammes of salicylic acid, and 20, 40, 50, 40 and 50 grammes of creasote to each strip.—*Pharm. Journ.*

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FRED'K A. CASTLE, M.D. .....EDITOR.
CHAS. RICE, PH.D. .....ASSOCIATE EDITOR.

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EDITORIAL.

WITH the commencement of our XVI. volume, we have introduced some changes in the arrangement of matter which, we hope, will be acceptable to our readers. The use of two columns to the page will not only improve the general appearance of the journal and facilitate the displaying of illustrations, but it will somewhat increase the amount of matter by lessening the number of blank spaces, and by avoiding waste in spacing out words to fit the narrow column measure.

THOSE who, at the end of the year, desire to bind the AMERICAN DRUGGIST for future reference, will find that by removing the outer leaves, the wire binding-staples can be reached. By raising the ends of the staples with a knife-blade, they can be withdrawn without injury to the journal, and the forms of text can then be removed entire.

SEVERAL years since we commenced the publication of titles of patents, trade-marks, and labels relating to the drug-trade. We continued the publication, without interruption, until last year, and the practice inaugurated by us has since been adopted by several drug-journals of this country. Although several offers were made us by patent-brokers and solicitors to relieve us of the labor of preparing the list, we found on each occasion of a trial, that the lists furnished by them were so far from complete that they were practically without much value, and we therefore preferred to do the work ourselves. As a really good report of such patents involves a considerable amount of work and occupies a great deal of space, we tried to learn whether it served any useful purpose, and were at length satisfied that its value to our readers did not justify its continuance. Since the publication of the list has ceased we have not received a single letter of inquiry relative to it, and so far as we can judge, our readers do not miss it. Hereafter we shall continue to answer any inquiries relative to patents, trade-marks, or labels, so far possible, and those who wish details respecting any particular U. S. patent can obtain them from the Chief Clerk of the U. S. Patent Office by forwarding twenty-five cents, with a memorandum of the number of the patent and name of the patentee.

WE solicit from our readers articles for publication relative to the business. Wherever illustrations are needed we will furnish them without expense to the author and will give any assistance in our power to render them creditable. Photographs and pencil sketches, however rough or crude, will be redrawn with care, and in the case of an original paper we will furnish the author with a reasonable number of separate copies of the paper if the request is made at the time the manuscript is sent. When papers are to be read before associations, we may be able to supply proofs in time for the author to use them in place of his manuscript, in which case the author's right to their public use before their appearance in the journal will be scrupulously regarded.

OUR columns are always open to correspondence relating to the practical details of pharmacy, whether it relates to professional or the purely mercantile interests of the business. When the matter is in the nature of a query, the writer's identity will be carefully guarded, if it is desired, and pains will be taken to furnish a prompt answer if possible. The only requirement we have to make in this connection is that the writer must furnish us with his name and post-office address for our *private* information.

WE have before called attention to the frequent omission by correspondents of the name of their *State* in letter-headings. This fact prevents us from answering by mail when, as is often the case, the post-master's stamp is too imperfect to admit of its being deciphered.

SOME years ago, an animated, but not very amicable discussion occurred in medical journals of England and this country concerning the relative social status of doctors' wives. Whatever their condition may be abroad, there would seem to be good reasons for believing that they are a "power behind the throne" in the United States, if there is any meaning in the recent practice of agents for the sale of mineral waters, medicines, sanitary appliances, etc., of addressing their circulars to

Dr. and Mrs. So-and-So.

Perhaps it is found that the circulars, which have been freely sent broadcast to doctors, are so generally consigned unopened to the waste-paper basket that the curiosity of the doctor's wife is taken into consideration. Rather a bright scheme, so it strikes us, and worthy of the trade.

ONE of the best evidences of a general revival of business would seem to be the fact that few papers on scientific topics appear in our pharmaceutical exchanges. One would infer that the customary writers are too busy in other ways, and that the natural result of private and occasional cogitation will bear fruit in some remarkably good work when summer leisure comes, and the State associations meet next fall.

THE picture of a tablet-maker's counter, on the first page, was made from a photograph kindly taken by Dr. Fuller, and we are indebted to Frazer & Co. for their courtesy in placing the facilities of their laboratory at our disposal for this purpose. This firm, and that of Boericke and Tafel, have taken the lead in tablet-making, and have greatly perfected many details of the method.

Iodized Hydrogen Water.—This is the name which Dr. Martimer Granville gives to a water which he recommends in the *Lancet* for persons suffering from uric acid accumulations. The water acts, he believes, by taking up and washing out excrementitious matter while passing through the blood and the extra-vascular fluids of the organism. The water may be made by very slightly iodizing distilled water, or dissolving in it a minute quantity of hydriodic acid—not enough of either to render the taste disagreeable—and then passing well-watered hydrogen gas through it. Water will only dissolve about two per cent, by measure, of hydrogen gas, but this greatly increases its capacity for holding solids in solution.—*Chem. and Drugg.*

CORRESPONDENCE.

Opium Assay.

To the Editor of the American Druggist.

WE see in your last issue a paper by Messrs. Wrampelmeier and Meinert, on the U. S. P. process for assaying opium, in which experiments are given attempting to disprove Mr. Conroy's results with regard to the amount of filtrate representing 5 grammes of opium. In the results which they publish, we cannot help noticing one point which, to us, seems inconsistent. The authors state that, when working on "powdered opium," the extractive from the opium was found to increase the volume of the liquid from 70 C.c. to 70.85 C.c., whilst in another experiment on opium, containing 20.7% of moisture, the volume of the fluid was only increased to 70.61 C.c. Now an average sample of opium will yield about 2.75 Gm. of dry extract when 7 Gm. are treated with lime and 70 C.c. of water, so that in the case of the sample above referred to, the filtrate would consist of 70 C.c. of water + 2.75 Gm. dry extractive + 1.449 C.c. of water contained in the opium. We think it will strike any practical pharmacist who reads the paper that these could not be compressed into 70.61 C.c., as the authors state was the case. We ourselves find that the increase in the volume of filtrate, working on powdered opium, amounts to about 2.2% (frequently more) of the original water used. Supposing the opium to have contained originally 20% of moisture, then 10 Gm. (= 8 Gm. of the powder) would increase the filtrate to 100 + 1.76 + 2 = 103.76 C.c. Under these circumstances we feel bound to support Mr. Conroy's results in opposition to those of Messrs. Wrampelmeier and Meinert. We may state that our results were obtained by the evaporation of 10 C.c. of the filtrate as obtained in the process of assay. We append the results obtained in one of our experiments:

10 C.c. filtrate = 10.16 Gm. when evaporated at 100° C. until it ceased to lose weight, left 0.378 Gm. of residue.

10 160 Gm. = weight of solution evaporated = 10 C.c.
.378 Gm. = weight residue.

9.782 Gm. = weight or volume of water in 10 C.c. of the filtrate.

$$\frac{50 \times 10}{9.782} = 51.11.$$

We shall be glad if you will kindly insert this in your next issue. Yours faithfully,

J. OLDHAM BRAITHWAITE,
EDWARD H. FARR,
Pharmaceutical Chemists.

THE LABORATORY,
50 Southwark st., London.

To the Editor of the American Druggist.

DEAR SIR:—In the November issue of your journal I find that I am called to task by Messrs. Wrampelmeier and Meinert in reference to a paper which I had the honor of reading before the Liverpool Chemists' Association, on December 4th, 1884. These gentlemen find fault with my paper because I state that 52 C.c. of the filtrate should be taken to represent the 5 grammes of opium, in the estimation of morphia in opium by the process of the U. S. pharmacopœia, and they contend that the increase in bulk due to the opium extractive is much less than I say, and that the 50 C.c. given in the U. S. pharmacopœia is nearer the mark.

Messrs. Wrampelmeier and Meinert have gone to much trouble to prove their statement by actual experiment, and I must admit that, *on paper*, their figures look very convincing. Notwithstanding this, I think that I shall be able to point out where their experiment has failed, and also to prove that 52 C.c. is the correct quantity of filtrate required to represent 5 grammes of opium. I contend that it is quite impossible the expel the whole of the moisture from the mark by drying it at 100° C. The mixture of lime with opium extractive, including the dregs, and containing all the other substances peculiar to opium, forms a compound that could not possibly be dried at this temperature, and a higher temperature would act injuriously. This is undoubtedly the cause of their failure.

I have now to show that 52 C.c. is the correct quantity of filtrate required to represent the 5 grammes of opium. The experiment referred to in my paper is founded on the well-known fact that opium yields, on an average, 50 per cent of solid extract, equal in consistence to good, new opium. It, therefore, follows that 5 grammes of opium contain 2.5 grammes of extract. This 2.5 grammes of extract, when dissolved in 50 C.c. of water, increases the bulk to 52 C.c.

I shall be pleased if Messrs. Wrampelmeier and Meinert will try this simple experiment and report the result.

Yours very truly, M. CONROY.

LIVERPOOL, 56 Hanover st.

Chloride of Lime Packages.

Editors American Druggist.

GENTLEMEN:—In your December number you call attention a process of packing chloride of lime in packages that are dipped in melted resin. That process is covered by U. S. Letters Patent No. 147,476 in which we are interested. Respectfully yours, LEGGETT & BRO.

German Willow Boxes.

THE *Chemist and Druggist* (Dec. 4th) has an article on this subject from which we take the following:

Box-making is notoriously an occupation in which only the poorest of people engage. In the east end of London it affords a scanty living to hundreds of families who have to work from early morning to late in the evening in order to earn a few pence per gross. Miserable as this work and its pay may be, it will astonish some to learn that the peasantry in a remote district of South Germany follow the same work during one period of the year for much less remuneration than is obtained in London. It is these people who make what is known in London trade as "German willow boxes," and this industry was started by Mr. Paul Metz, who, after much trouble, succeeded in finding a timber—in the locality mentioned—which could be worked into chips as easily as the English willow.

In the district to which we have referred, Mr. Metz has a central agency, superintended by a trustworthy overseer, who collects the timber, and has it cut up into logs for sale to the peasants. After the harvest season is over, the peasants go the agency and receive a supply of wood; this they take to their homes and slice it by hand into the thin shavings which are required for the sides and ends of the boxes. The slices are then suspended from the ceilings until they are thoroughly dried. Slicing is done by the father of the household or the elder sons, but in the other operations all members of the family who are able to lend a hand are employed.

After drying and smoothing out the slices of wood, they are stamped out into the circular pieces for top and bottom (which operation is done with punches obtained from the agency) and the long, narrow pieces required for the sides. This operation differs from that followed in making pill-boxes, in which case a long tube of card-board is first made, and then cut into shorter cylinders of the required size. In the case of willow boxes, the operation is much more tedious, as will be seen. The next part of the operation is the formation of the box; this is simply done by taking a disc, the edge of which is smeared with a peculiar quick drying cement, passing round it a strip of the wood, and placing below the over-lapping edge a touch of the cement. The box is then slipped between two parallel wooden bars, which allow free sliding, and yet prevent the bent wood springing back. The cement, although quick setting, does not become firm for half an hour or more, so that the two bars are of such a length that by the time a box traverses from one end to the other it is practically firm, although the worker passes in the boxes with remarkable rapidity. The cement which is used is one of the secrets of the industry; it is a home-made article, free from glue, yet strong and capable of resisting either damp or heat to a remarkable degree. The bodies and lids of the boxes are both made in the manner described, and, after being fitted, are carried to the agency, where they are examined, counted, and payment made according to number. This payment is very low, as may be judged from the fact that a man earns only from 5s. to 6s. (English) per week, young children from 2s. to 2s. 6d., and youths about 4s. But even this miserable pittance is "found money" to the peasants, and were it not for these German willows, they would, in most cases, have no employment during the winter, or would have to take to a lower class of box-making. There are over a thousand families engaged in the industry, apart from those employed in the agency to pack the boxes. It is rather a remarkable fact that the boxes, although made entirely by hand, and necessarily passing through several hands, are yet spotlessly clean. In this respect they are in no way inferior to machine-made boxes, while they have a polish about them which English willows do not have. This, we believe, is natural to the wood, and is enhanced by the peculiar manner of cutting it into slices and drying. [It is well known that English willow ointment boxes have become very scarce: in fact, we believe that none have been imported in this country for some time. One of us has had an invoice of the ointment boxes mentioned in the preceding article, and can testify of his own knowledge that they were well made, well glued, and clean.

There are several other manufacturers of wooden chip ointment boxes in Germany, but the product of some of them, which we have had some experience with, did not come up to our expectations.—ED. AMER. DRUGG.]

A Fire-Proof Tree.—A remarkable tree is mentioned in *Gardeners' Chronicle* (Sept. 18th, p. 360), which is said by Mr. W. T. Thiselton Dyer to be absolutely indestructible by fire, it surviving in large districts where the dry pastures and bush are burnt twice a year and everything except this tree is destroyed. It would be interesting to learn to what cause this immunity is due. The tree is a species of *Rhopala*, of a contorted appearance, and growing to about twenty feet in height.—*Pharm. Journ.*

SELECTIONS FROM THE HOSPITAL FORMULARY

OF THE DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION OF THE CITY OF NEW YORK.

(Continued from page 173, vol. XV.)

136. *Emulsio Olei Morrhuæ cum Calce (I.) (Bell. and Char. Hosp.).*

℞ Olei Morrhuæ,
Liquoris Calcis.....āā fl. ℥ 8
Olei Cinnamomi.....♏10

Mix.
Dose: A tablespoonful.

Note.—Lime-water produces an insoluble lime soap with fixed oils. Though this is no emulsion, it is called so for convenience. The flavoring ingredient may be altered according to taste. A good mixture for flavoring emulsions of cod-liver oil is prepared by adding to each pint of emulsion the following mixture:

Oil of Bitter Almonds.....10 drops.
Oil of Gaultheria ..... 4 "
Oil of Cinnamon..... 2 "

137. *Emulsio Olei Morrhuæ cum Calce (II.) (Bureau O. D. P.).*

℞ Olei Morrhuæ ....fl. ℥ 2
Liquoris Calcis ....fl. ℥ ½
Syrupi Calcii Lactophosph. ....fl. ℥ 1½

Mix.
Dose: A teaspoonful. (Dr. G. H. Bosley.)

138. *Emulsio Olei Morrhuæ pro Infantibus (Bell. Hosp.).*

℞ Olei Morrhuæ,
Liquoris Calcis ....āā fl. ℥ 5
Mucilag. Acaciæ..... ...fl. ℥ 4
Syrupi Hypophosphitum... ...fl. ℥ 2
Olei Cinnamomi..... ♏30

Mix.
Dose: A tablespoonful.

139. *Emulsio Olei Ricini.*

℞ Olei Ricini.....fl. ℥ 4
Acaciæ pulv..... ..... gr. 400
Aquæ ....fl. ℥ 1½
Syrupi,
Aquæ Cinnamomi.....āā fl. ℥ 3
Spir. Cinnamomi.....♏10

Make an emulsion, in the usual manner, with the oil, acacia, and water. Then add the other ingredients successively, with continued trituration.

Note.—Spirit of cinnamon is prepared by dissolving 1 volume of oil of cinnamon in 9 volumes of alcohol.

140. *Emulsio Olei Terebinthinæ.*

℞ Olei Terebinthinæ.....fl. ℥ ½
Acaciæ pulv..... ℥ 2
Olei Menthæ Pip.....gtt. 5
Syrupi..... ....q. s. ad fl. ℥ 4

Pour the oil of turpentine into a clean and perfectly dry 4-oz. vial, and shake it about so that the whole interior surface may be moistened by the oil. Then add the acacia, and shake again. Next add the oil of peppermint and enough syrup to make 4 fl. oz., and mix by agitation.

Note: On standing, this mixture will separate. It may be restored by shaking.

141. *Mistura Olei Morrhuæ (Bureau O. D. P.).*

℞ Olei Morrhuæ.....fl. ℥ 16
Liquoris Potassæ.....fl. ℥ 2½
Mellis.....fl. ℥ 3
Acaciæ pulv..... ℥ 1
Olei Anisi..... ...gtt. 20
Olei Menthæ Viridis .....gtt. 18

Mix.
Dose: A tablespoonful. (Dr. G. S. Winston.)

142. *Oleum Morrhuæ Phosphoratum (Bell. Hosp.).*

℞ Olei Phosphorati (U. S. Ph.)...gr. 100
Ætheris Fortioris.....fl. ℥ 2
Olei Morrhuæ.....q. s. ad fl. ℥ 16

Mix.
Dose: 1 to 4 fluidrachms, as may be directed. 233 minims of the mixture, or, practically, ½ fluidounce, contain $\frac{1}{30}$ grain of phosphorus.

III.—ELIXIRS AND WINES.

IV.—TINCTURES AND SPIRITS FOR INTERNAL USE.

The formulæ for these preparations (Nos. 143–157) do not differ materially from those in common use, and are, therefore, here omitted.

V.—HYPODERMIC SOLUTIONS.

Hypodermic solutions should be prepared with the utmost care, so as to exclude, as much as possible, all micro-organisms. If possible, the distilled water, vials, and everything coming in contact with them during the preparation should previously be sterilized by a sufficient degree of heat. If this is not convenient, the solution prepared with distilled water should be filtered through a small pellet of pure absorbent cotton, pushed into the neck of the funnel. These solutions should be prepared only in small quantity, as they are liable to deteriorate by keeping. Many of them may be preserved for a considerable time by the addition of 15 to 20 per cent of alcohol or glycerin, or by the addition of boric acid (about 5 grains to 1 fl. oz.), or by using chloroform water instead of plain distilled water for solution. The last-named agent is particularly useful. Preservatives should, however, not be added, except by the direction, or with the knowledge of the prescriber. As soon as the slightest change is noticed in any hypodermic solution, it should be rejected.

The doses appended to the several solutions quoted here may, of course, be varied by the prescribers, according to circumstances.

158. *Injectio Acidi Carbolici Hypodermica.*

℞ Acidi Carbolici..... .. gr. 2
Aquæ Destillatæ ...q. s. ad ♏ 100

Dissolve and filter.
Dose: 5 to 15 ♏ ($\frac{1}{10}$ to $\frac{3}{10}$ grs. of carbolic acid).

159. *Injectio Aconitinæ "Duquesnel" Hypodermica.*

℞ Aconitinæ Nitrat. cryst.,
"Duquesnel"..... ....gr. 1
Aquæ Chloroformi.....♏ 2000

Dissolve and filter.
Dose: 5 to 10 ♏ ($\frac{1}{400}$ to $\frac{1}{200}$ grain of Duquesnel's nitrate of aconitine).

Note.—The utmost caution should be exercised in prescribing and using aconitine. There is great difference in therapeutic action between the commercial aconitines, some being very much weaker than others. Amorphous aconitines should never be prescribed or dispensed. The most uniform and reliable commercial variety during some years past has been Duquesnel's crystallized nitrate of aconitine, and until more experience has been gathered regarding more recent varieties, Duquesnel's alkaloid will alone be furnished for use in this Department. *Physicians are particularly urged never to prescribe aconitine without specifying the maker's name and the crystalline condition,* as very serious accidents have happened from the accidental and unintentional substitution of a very active variety for a weaker one, there being no means to distinguish the one from the other, except by their effects.

It is best, when preparing the above solution, to add some preservative, as the bulk of the solution is quite large, and it ought to be made to last some time.

160. *Injectio Apomorphinæ Hypodermica.*

℞ Apomorphinæ Hydrochloratis...gr. 2
Aquæ Camphoræ.....♏ 100

Dissolve and filter.
Dose: 2 to 8 ♏ ($\frac{1}{25}$ to $\frac{1}{6}$ grain of the salt).

Note.—This solution should always be freshly made, as the salt decomposes under the influence of light.

161. *Injectio Atropinæ Hypodermica.*

℞ Atropinæ Sulphatis.....gr. 2
Aquæ Destillatæ.....♏ 100

Dissolve and filter.
Dose: 2 to 4 ♏ ($\frac{1}{25}$ to $\frac{1}{12}$ grain of the salt).

162. *Injectio "Brown-Sequard" Hypodermica.*

℞ Hyoscyaminæ Sulph, amorph.,
Coniinæ Hydrobromatis.....āā gr. $\frac{1}{60}$
Strychninæ Sulphatis.....gr. $\frac{1}{14}$
Brucinæ Sulphatis.....gr. $\frac{1}{60}$
Morphinæ Sulphatis.....gr. $\frac{1}{10}$
Aconitinæ Nitr. cryst., "Duquesnel,"
Atropinæ Sulphatis.....āā gr. $\frac{1}{300}$
Aquæ Destillatæ.....♏ 10

Average dose: 10 ♏.

Note.—This solution was at first prepared for certain patients who found great difficulty in swallowing pills, as a substitute for Brown-Sequard's neuralgic pill (see *Pilulæ Neuralgicæ*), the constituents of which (except the Cannabis Indica) are represented by it as closely as possible. Subsequently it was found, by Dr. H. V. Wildman, to be an exceedingly effective hypnotic in various forms of insanity accompanied by excitement and insomnia. In such cases it is preferable to administer a mixture of 5 minims of the above solution with 5 minims of Magendie's solution of morphine.

163. *Injectio Caffeinæ Hypodermica.*

℞ Caffeinæ Sodio-salicylatis...gr. 20
Aquæ Destillatæ. ...q. s. ad ♏ 60

Dissolve and filter.
Dose: 6 to 8 ♏ (2 to 3 grains of this salt).

Note.—The sodio-salicylate and the sodio-benzoate of caffeine are the most soluble compounds of caffeine known, but, as furnished by the makers, they contain varying proportions of the alkaloid. Those prepared at the General Drug Department contain, uniformly, 50 per cent of caffeine.

164. *Injectio Cocainæ Hypodermica.*

℞ Cocainæ Hydrochloratis...gr. 4
Aquæ Destillatæ.....♏ 100

Dissolve and filter.
Dose: 1 to 2 ♏ ($\frac{1}{25}$ to $\frac{1}{12}$ grain of the salt), repeated when required.

Note.—This solution, when used as a local application to mucous membranes, is best prepared with a saturated and filtered solution of boric acid in distilled water. When used hypodermically, chloroform water is preferable.

The mydriatic effect which cocaine exerts upon the pupil of the eye may be neutralized by adding one-half grain of hydrochlorate of pilocarpine to each fluidrachm of 4-per-cent solution of cocaine.

165. *Injectio Ergotini Hypodermica.*

℞ Extracti Ergotæ (U. S. Ph. 1880).gr. 100
Aquæ Camphoræ.....q. s. ad ♏ 500

Dissolve and filter.
Dose: 5 ♏ and more.

Note.—This solution should be freshly made when wanted for use. It is of the same strength as the fluid extract, each minim representing 1 grain of ergot. In place of Extractum Ergotæ, purified Ergotin (so-called) may be used.

166. *Injectio Hyoscyaminæ Hypodermica.*

℞ Hyoscyaminæ Sulph. amorph.....gr. 5
Aquæ Destillatæ.....fl. ʒ 1

Dissolve and filter.

Dose: 1 to 5 ♏ ($\frac{1}{100}$ to $\frac{1}{20}$ grain). As a hypnotic for insane patients, the average dose is 10 minims, equivalent to nearly $\frac{1}{10}$ grain of the salt.

Note.—Hyoscyamus contains two alkaloids—*hyoscyamine*, which is crystalline and forms crystallizable salts, and *hyoscine* (discovered by Ladenburg), which is amorphous. When hyoscyamine crystallizes from the final solution of alkaloids extracted from henbane, the mother-liquid contains the other alkaloid, *hyoscine*, together with a small proportion of hyoscyamine remaining in solution. As long as the separate existence of hyoscine was unknown, the mother-liquid was simply evaporated and the dry residue sold as "amorphous hyoscyamine." It is this amorphous mixture of alkaloids upon which most of the recorded therapeutic experience is based. The white crystalline alkaloid hyoscyamine is but feebly hypnotic or not at all (*Kobert*). The real hypnotic is *hyoscine*. But as it costs so much to separate this alkaloid completely from the residue [pure hyoscine costs ten times as much as hyoscyamine], and as the mixture obtained by simply evaporating the mother-liquid has been found equally effective, the manufacturers continue to supply the latter. Physicians desiring to use hyoscyamine as a hypnotic often specify: "*Hyoscyam. Sulph. pur.* (or *cryst.*), perhaps with the addition of the maker's name (Merck, Gehe, etc.) while in fact they should have specified thus: "*Hyoscyaminæ Sulphatis amorphi (colorati)*," which is in form of a *dry, yellowish powder*. The brown syrupy kind of hyoscyamine formerly supplied, and still kept in stock by many, is worthless, and should not be used.

167. *Injectio Morphinæ Hypodermica, Magendie.*

Magendie's Solution of Morphine.

℞ Morphinæ Sulphatis.....gr. 16
Aquæ Destillatæ.....fl. ʒ 1

Dissolve and filter.

Dose: 3 to 15 ♏ ($\frac{1}{10}$ to $\frac{1}{2}$ grain of the salt).

Note.—This is best preserved by using chloroform water in place of plain distilled water.

Special care should be taken that this is not mistaken for the "U. S. solution of Morphine."

168. *Injectio Physostigmatis Hypodermica.*

℞ Physostigminæ [*vel* Eserinæ] Salicylatis.....gr. 1
Aquæ Destillatæ.....♏ 160

Dissolve and filter.

Dose: 2 to 10 ♏ ($\frac{1}{60}$ to $\frac{1}{10}$ grain of the salt).

Note.—If this solution is to be kept in stock, 30 minims of the water may be replaced by alcohol, or a saturated solution of boric acid may be used in place of the water.

The salicylate is preferable to other salts of this alkaloid, as it is distinctly crystalline and not deliquescent. In solution it does not keep any better than the sulphate.

169. *Injectio Pilocarpinæ Hypodermica.*

℞ Pilocarpinæ Hydrochloratis.gr. 2
Aquæ Destillatæ.....♏ 100

Dissolve and filter.

Dose: 5 to 15 ♏ ($\frac{1}{10}$ to $\frac{1}{3}$ grain of the salt).

170. *Injectio Quininæ et Ureæ Hypodermica.*

℞ Quininæ et Ureæ Hydrochloratis.....gr. 5
Aquæ Destillatæ.....♏ 10

Dissolve and filter.

Dose: 2 to 10 ♏ (1 to 5 grains of the salt).

Note.—Hydrochlorate of quinine and urea (also known as *chininum (bi-)muriaticum carbamidatum*) contains 69 per cent of pure, anhydrous quinine. (See NEW REMEDIES, 1878, 334.)

171. *Injectio Quininæ Hypodermica, Lente.*

℞ Quininæ Sulphatis.....gr. 80
Acidi Sulphurici dil.....♏ 30
Acidi Carbolici liquef.....♏ 5
Aquæ.....fl. ʒ 1

Heat the quinine with the sulphuric acid and water to boiling (the object being to sterilize the liquid), then add the carbolic acid, and pour the liquid into a vial previously rinsed with boiling distilled water, which must be well stoppered.

Six minims contain about 1 grain of sulphate of quinine.

172. *Injectio Quininæ Hypodermica, Seltzer.*

℞ Quininæ Sulphatis.....gr. 20
Acidi Lactici.....q. s.
Aquæ Destillatæ....q. s. ad ♏100

Dissolve and filter.

Five grains contain 1 grain of sulphate of quinine.

To be continued.

Efficient Sedative Cough Mixture.—Dr. H. C. Wood, of the *Therapeutic Gazette*, recommends the following:

℞ Potassii Citratis.....ʒ i.
Succi Limonis.....ʒ ij.
Syr. Ipecac.....ʒ ss.
Syr. simplicis .....q. s. ad ℥ vi.

M. Sig. A tablespoonful from four to six times a day.

When there is much cough or irritability of the bowels, paregoric may be added.

Application for Warts.—The following formula, a modification of that recommended by M. Vigier for corns, is largely used by Vidal:

℞ Acid. Salicylici..... 1 Gm.
Alcohol, 90°..... 1 "
Ether..... 2½ "
Collodion..... 5 "

M. The solution should be painted over the affected surface each day.—*Jour. de Méd. et de Chirurg.*

Night Service of Drugs.—A correspondent of the *British Med. Journ.* writes: The Municipal Council has adopted M. Georges Berry's report in establishing a night service for the supply of drugs. It will be organized immediately. The sick who desire to procure the medicines prescribed by the medical officers to the night service, must apply to the police office, when a policeman, supplied with an order from the head office, will conduct them into a *maison de secours*. If the medicines prescribed be not there, or if the sick persons be not registered at the police office, they will be sent to one of the chemists who are officially police-service chemists. The patients who are able to pay will be charged cost price, besides giving one franc and a half extra for the trouble of being attended at night. A loan of 3,000 francs (£120) will be made for the night service for drugs.

Paste for use on tin may consist of 1 oz. of flour made into thin paste with a dilute solution of glue in water, and 2 drachms of Venetian turpentine.

Antipyrin, when given with arsenic, is said to cause an eruption resembling measles.

Recent Medicinal Chemicals.

AT the recent meeting of the *Deutsche Naturforscher und Aerzte* at Berlin, Mr. E. Merck exhibited a large number of the products of his chemical works, and published a pamphlet containing notes on some of the more important of them, from which we make the following abstract:

Cathartic Acid, an acid glucoside, is a vegetable purgative. It is very complicated in its composition, and is very prone to decompose. It is almost tasteless. According to Kubly, 0.1 Gm. (about 1½ grains) produces loose bowels after about 14 hours. It is not used subcutaneously.

Chromic Acid has heretofore always been supplied in a more or less impure condition, sulphuric acid being always present. Merck has now succeeded in preparing absolutely pure chromic acid (entirely free from sulphuric), having the color of kermes, shining, deliquescent, and "easily soluble in water and alcohol."

Molybdic Acid as usually furnished contains more or less ammonia. Merck now furnishes a pure molybdic acid free from this impurity.

Æthoxy-Caffeine.—This compound is produced by substituting the group C_2H_5O in place of one hydrogen in caffeine. It forms white, needle-shaped crystals, melting at 140° C., very little soluble in alcohol or ether, insoluble in water, and of strongly basic properties.

Dujardin-Beaumetz (*Jour. de Ph. et Chim.*, 1886, 611) considers it a pure narcotic, particularly useful in headache. It is generally administered in solution in water, by the intervention of salicylate of sodium. Dose, 4 to 16 grains per day; in single doses of 4 to 8 grains, or in divided doses of 1½ grains.

The same author has also combined it with cocaine as follows:

Æthoxy-Caffeine.....4 gr.
Salicylate Sodium.....4 gr.
Hydrochlorate Cocaine...1½ gr.
Linden-flower Water... 2 fl. oz.
Syrup..... ½ fl. oz.

Agaricin ("purissimum, Merck."). —The efficacy of this substance (really agaric acid) in relieving the sweat of consumptives has been demonstrated by J. M. Young, Seiffert, and Pröbsting in 1882. It is given in doses of $\frac{1}{12}$ to $\frac{1}{4}$ grain in pills, to which some Dover's powder is usually added, since agaricin often produces loose bowels, sometimes accompanied by violent abdominal pains. Young recommends the following combination:

℞ Agaricini.....gr. 8
Pulv. Ipecac. et Opii.....gr. 120
Althææ Pulv.,
Mucilag. Acaciæ.....āā gr. 60

To be made into 100 pills; 1 or 2 pills to be taken at night.

The hypodermic administration of agaricin causes pain.

Note by ED. AM. DR.—Considerable quantities of Merck's agaricin have been used in Bellevue Hospital for relieving the night-sweats of consumptives, or other patients suffering from the same cause, with uniform success. It is usually given in combination with atropine and aromatic sulphuric acid:

℞ Agaricini (Merck).....gr. 10
Atropinæ Sulphatis....." 1
Acidi Sulph. Arom.....♏ 1200

Dissolve and filter. *Dose:* 10 minims, containing $\frac{1}{120}$ grain of agaricin, $\frac{1}{1200}$ grain of atropine sulphate, and 10 minims of aromatic sulphuric acid. To be administered in syrup or simple elixir.

Aloin. Merck's aloin is "barbaloin," that is, it is the aloin extracted from Barbadoes aloes.

May be used hypodermically [? ED. AM. DR.] in doses of 2 to 4 grains.

Apomorphine. Rossbach recommends this as an expectorant, in combination with morphine:

℞ Apomorp. Hydrochlor.....gr. ¾
Morphinæ Hydrochlor. ... " ½
Acid. Hydrochlor. dil. .. ..ɱ 8
Aquæ ....5 fl. oz.

Dose: A teaspoonful every 2 to 4 hours. To be dispensed in a bottle of black (or other non-actinic) glass.

Arbutin.—Uva Ursi leaves contain, among other constituents, arbutin, which is easily soluble in water, less so in alcohol, and has a bitter taste. According to L. Lewin, its action appears to be due to the fact that it is split up into several other compounds in the body, one of them being hydrochinon, from which emanate its antiseptic properties. Arbutin has been found highly beneficial in the treatment of catarrh of the bladder, in doses of 45 to 60 grains, either in solution or in powder.

Atropine.—Perfectly pure atropine is in the form of hard, shining, *heavy* crystals, melting at 115° C. (239° F.). It should be free from daturine (so-called light atropine), and if the melting point is below 115° C., it is always contaminated with this alkaloid, which also interferes with its crystallizing properly.

Atropine acts more strongly upon the pupil of the eye when it is mixed with cocaine. Hirschberg recommends:

℞ Atropine Sulphatis.....gr. ¾
Cocainæ Hydrochloratis... " 1½
Aquæ Destillatæ.....ɱ 80

Since true Belladonna root is so much in demand, and its price has advanced so high, the so-called "false belladonna," derived from a Japanese species of Scopolia, has appeared on the market in large quantities, and always finds ready purchasers. It is, therefore, probable that this substitute is utilized by manufacturers of atropine, a supposition which is justified by the low melting point of some of the commercial atropines.

Dibromated Camphor — possesses properties analogous to those of monobromated camphor.

Cocaine.—Among the special uses or modes of application mentioned by Merck, the following deserve notice here:

Solutions of cocaine are best preserved by the addition of glycerin. Meyer recommends inhalations of cocaine in tuberculosis. Others recommend it generally as an anæsthetic in affections of the pharynx and larynx. It is added with advantage to solutions of bichloride of mercury used hypodermically in syphilitic cases, to deaden the pain caused by this mode of treatment; a dose of ¾ grain of cocaine being about the right quantity. Randolph and Dixon recommend, as a painless caustic, a mixture of nitric acid and concentrated solution of hydrochlorate of cocaine. The wound is to be dressed with salicylate of cocaine.

The most efficient antidote against poisoning by cocaine is nitrite of amyl, according to Schilling.

Codeine Phosphate.—The introduction of this salt has rendered the hypodermic use of the alkaloid possible. It is recommended highly in diabetes, in doses of 1 grain three times daily, increasing every week by 1 grain, until about 9 grains are reached. Cod-liver oil should be given at the same time (Smith; Hermann). In morphinism, Leppmann recommends the alternate administration of one-third to seven-eighths grain of this salt, and eight grains of monobromated camphor.

Colchicin.—The pure, crystallized principle is a powerful poison and must be used with caution. The dose, in gout and rheumatism, is $\frac{1}{120}$ to $\frac{1}{30}$ grain, two or three times daily. Not to be recommended for subcutaneous use.

Colocynthin, the glucoside of colocynth, is soluble in water and alcohol. When administered internally, or *subcutaneously*, it acts as a purgative, but the hypodermic employment is painful. Injected into the rectum it causes purging within one hour. Dose, internally, 1½ to 6 grains; hypodermically, $\frac{1}{6}$ to $\frac{1}{3}$ grain, dissolved in water. [Possibly, when combined with cocaine, the hypodermic injection may be rendered painless. It would be very advantageous if it could be used in this way, as there are many cases where it would be desirable to be able to administer a purgative hypodermically.—Ed. Am. Dr.]

Emetine.—Pure emetine (from ipecac) is difficultly soluble in water, but easily in alcohol. It may be administered as an emetic, in doses of $\frac{1}{6}$ grain: as an expectorant, in doses of $\frac{1}{60}$ to $\frac{1}{30}$ grain.

Guaranine.—Merck's guaranine is prepared, according to his own statement, from guarana, though it is identical with caffeine, and some other manufacturers do not hesitate to put up caffeine (from tea or coffee) as "guaranine."

Hyoscine.—Merck states that probably all the hyoscine sold in the market is derived from his factory.

This alkaloid is the most powerful hypnotic known. Merck quotes from a paper, giving an account of experiments made by Prof. Kobert and Dr. Sohrt, of Dorpat—but which had not been published yet when Merck wrote his article—the following passage:

"Among the drugs which are capable of quieting maniacal excitement, hyoscine occupies the first rank, both on account of its promptness, and by reason of its innocuousness in cases of severe heart-disease. There being only minute doses required, the treatment is not expensive."

Lakmoid.—This is a substitute for litmus. It is a derivative of resorcin (see our vol. for 1885, p. 68), and is a very delicate indicator. The following solution is recommended:

Lakmoid ... .8 grs.
Water .....3¾ fl. oz.
Alcohol (96%)... .....3¾ fl. oz.

Naphthalin.—Crystallized naphthalin purified by alcohol, has been found a valuable agent in the treatment of diarrhœa in cases of typhoid, in children, and in consumptives. It exerts only a local action in the intestines, as it is not absorbed. Dose, up to 75 grains per day.

Papayotin.—It will be of interest to compare Merck's statements with those of Gehe & Co., quoted in our last November number. Merck says:

1 part of papayotin peptonizes 200 parts of blood-fibrin. Some of the commercial papayotins often possess less than one-fourth of this strength. It is best to use the remedy in *alkaline* solution (a few drops of solution of potassa being added). In this way it exerts its action strongest. When the solution is acidulated with lactic acid, the effect is weaker. Papayotin does not dissolve the fungoid growth lining the respiratory tract in diphtheria and croup, but it loosens them so that they can be expectorated. For local applications and for inhalation, it should be used in as *concentrated* solution as possible.

Physostigmine (*Eserine*). — Small doses of this alkaloid have recently been found to possess constipating effects in man ($\frac{1}{60}$ to $\frac{1}{15}$ gr.). In veterinary praxis it is used hypodermically (dose ½ grain) in colic of horses and cattle. For contracting the pupil of the eye, a solution of ½ grain in a fluidrachm of water is usually employed. A solution of eserine (or its salts) which has turned red is neither inert nor hurtful.

Resorcin.—Pure, resublimed resorcin has recently been more generally used for internal diseases. It has been recommended in cases of septic diarrhœa in children, either acute or chronic; 16 grains to be dissolved in 5 fluidounces of castor oil, by the aid of heat; the whole to be taken at one dose. Children to take one-fourth the amount.

Glucose, chemically pure and anhydrous, is offered by Merck. Many commercial brands said to be anhydrous, turn out to be far from being so. [A preparation of this kind was very much needed, for the purpose of making standard solutions of glucose, in making comparative tests with different reagents for sugar in urine.—Ed. Am. Dr.]

The Violet Coloration of Starch Caused by Chloride and Bromide of Iodine.

In testing potassium iodide for iodate by means of sulphuric acid and starch solution, a violet coloration is often noticed. H. Beckurts and W. Freytag find that a similar color is formed when chlorine or bromine water is gradually added to the blue iodide of starch solution, or when a slight excess of iodine is added to yellow bromide or chloride of starch. The coloration is undoubtedly due to the formation of a compound of starch and chloride or bromide of iodine. This color, like the blue iodine coloration, disappears when the solution is boiled, and reappears on cooling. The authors believe the presence of traces of chlorate to be the cause of the violet color appearing during the testing of potassium iodide.—*Chem. Centalbl.* and *J. Chem. Soc.*

Squills in Hooping-Cough.—Dr. Nettier, of Nancy, has treated a number of cases of hooping-cough with simple *Oxymel Scillæ*, taking pains only to obtain that which was of good quality. He advises abandonment of cough syrups, and uses the squill even when there is diarrhœa or vomiting. Dr. Runy corroborates the statements of Dr. Nettier, and says that he has known cases which have gone on for weeks, yield to this preparation of squill within a few days.—*Lancet.*

Buffalo (N. Y.) College of Pharmacy.—The students of this College have organized a society, and elected the following officers: *President*, John A. Moore, of Buffalo; *Vice-President*, Paul Habenstreit, of Buffalo; *Secretary*, John Kreuz, of Buffalo; *Treasurer*, L. O. Thompson, of Elmira.

An ounce of carbonate of ammonia to a pint of water is said to check mammary abscess if frequently applied.

A new preparation of the nature of collodion is made of Mastic (powdered), 3 grains; Balsam of Peru and narcotin, each ʒi.; chloroform, ʒv.; shake until dissolved. It is recommended as an application in neuralgia and to rheumatic joints to relieve pain, and, when spread on linen, as an adhesive plaster.—*l'Orosi.*

Tribromallyl, discovered by Wurtz, is prepared by decomposing iodal with 2½ times its weight of bromine. It is a colorless liquid, s. g. 2.436, and soluble in ether. Two to four drops dissolved in ether may be given hypodermically, or five drops in capsules as a remedy for asthma, hysteria, whooping-cough, etc.

A Philadelphia physician says that a great deal of what passes for heart disease is only mild dyspepsia, that nervousness is commonly bad temper, and that two-thirds of the so-called malaria is nothing but laziness. Probably he doesn't tell his patients so, but there is no doubt a good deal of truth in what he says.

Notes on Essential Oils.—A trade circular just received by us from Schimmel & Co., of Leipzig, contains a large amount of interesting information, from which we select the following:

Oil of Anise and Anethol.—Last year's scant harvest of Russian anise has been followed this year by an abundant crop, in consequence of which the price of the oil has been very considerably lowered. The harvest was gathered under unusually favorable conditions of weather, and the crop has a very fine appearance, though it is still contaminated with earth or soil, as it is customary to thresh anise in the open fields.

Induced by an increasing demand after extra fine qualities of oil of anise, Schimmel & Co. have undertaken the manufacture of *anethol*, the aromatic portion of oil of anise. This is a solid at temperatures below 20° C. (68° F.). In the oil it is accompanied by a light hydrocarbon, which is not solidifiable, and has a most disagreeable odor and taste. There can be no doubt that the presence of the latter in the oil greatly detracts from its quality, and that pure anethol should be considered superior to any kind of liquid oil of anise. But hitherto anethol has been rather a chemical curiosity (though familiar enough to those who handle the oil), because it could not be produced at a popular price. Schimmel & Co. announce that they have after long-continued experiments discovered a method by which they can produce pure anethol in any desired quantity. This method is not published, but the statement is made that no heat enters into the process, whereby one risk is removed of injuring the product. The price of anethol produced by the firm is not unreasonably high, compared with that of the oil.

There can be no doubt, in our opinion, that anethol is superior to any kind of oil of anise that has ever been put on the market, and that, where a fine anise flavor is demanded, no other substance can take its place.

Oil of Camphor.—The utilization of crude oil of camphor for the manufacture (or rather extraction) of safrol on a large scale, enables the manufacturers to offer the light oil of camphor, obtained as a by-product, at very low prices. It has been found to be very serviceable for dissolving resins and rubber, also for dissolving old indurated oil, paints and similar stains, and is, at the same time, less easily inflammable than benzin or oil of turpentine.

Oil of Citronella.—The export of this oil from Ceylon (Colombo and Point de Galle) is constantly increasing. The quantity shipped in 1885 was about 295,000 lbs. In 1886 this is sure to be greatly exceeded. Most of this oil is consumed in the United States (by soap manufacturers).

Oil of Eucalyptus.—Mr. Joseph Bosisto, the founder of the eucalyptus industry in Australia, has transferred his residence to Europe, in order to be able to superintend the organization of the industry in person. It is intended to put on the market two qualities of oil of Eucalyptus globulus, an inferior sort in large packages as heretofore, and another in small vials, holding 1 or several ounces, as a medicinal specialty. Schimmel & Co. doubt the wisdom of this last-named form of package so far as Germany is concerned.

The ordinary quality of oil of Eucalyptus amygdalina has been chiefly used as a perfume by soap-makers, though it has never attained to any importance, as there is no lack of cheaper ethereal oils of an agreeable odor. It is, however, possible that it may find practical employment as a destroyer of insects, since it has been found by Schultz to have strong insecticidal properties.

The oils of the different species of eucalyptus, though somewhat different from each other in odor, are nevertheless closely allied, and generally recall the odor of camphor or turpentine. One of them, however, namely, that obtained from Eucalyptus corymbosa, is reported to have a very pleasant odor, resembling that of roses and lemons. Schimmel & Co. attach the remark that, if this report is true, it seems strange that the oil has never made its appearance in commerce.

Oil of Pine Needles.—For purposes of perfumery, the oil distilled from the needles of the Silver-Fir (*Pinus picea*) deserves the preference. The oil which may be considered to be next in quality is that obtained from *Pinus balsamea* (the Balm of Gilead Fir). Both of these are used as refreshing perfumes, diffusing a delightful pine forest odor through the rooms, when used as spray. Somewhat inferior qualities [in our judgment] are the oils distilled from *Pinus Pumilio* (mountain pine), and from *Pinus canadensis*, the latter of which is made in this country. [The practical use of the two first-named oils does not seem to be much known as yet in this country, as we had ourselves considerable difficulty in obtaining the oils, they not being, as yet, kept in stock by the New York branch of the manufacturers.—ED. AM. DR.]

Oil of Orris.—This is one of those oils which do not spoil by age. As is well known, the oil consists to its largest extent of myristic acid, and only a minute quantity of the peculiar essential oil of orris, it being impossible to isolate the latter in a practical way. Though the oil, in its solid condition, will keep well, it is, nevertheless, advisable to make an alcoholic solution, and to keep it in this manner. This oil was first introduced by Schimmel & Co. in 1874, at which time the price per kilo had to be fixed at 2,400 marks. At present it can be sold for 850 marks. And while it was formerly prepared on a small scale, at present it takes no less than 2,000 kilos of orris root for a single charge of the apparatus.

Artificial Oil of Bitter Almonds.—Schimmel & Co. point out that the artificial oil [nitrobenzol or nitrotoluol are not meant by this] always contains more or less of free (?) chlorine, which fact alone permits it to be readily distinguished from the natural oil. [This impurity has been pointed out before, but is usually overlooked in testing the oil.]

Oil of Patchouli.—It is becoming more and more difficult to obtain suitable supplies of patchouli leaves. The latter are either delivered in poor quality, or the steamers refuse to take the packages on board, fearing that the strong odor of the contents may be communicated to other portions of the freight.

Artificial Oil of Wintergreen.—Schimmel & Co. have, some time ago, commenced the manufacture of artificial oil of wintergreen on a large scale. That is, they are making the pure salicylate of methylic ether, minus the terpene which is found in the natural oil, and which does not partake of its odor or taste. The quality of the artificial oil is at least equal to that of the natural, and its price is *lower*, whereby all competition of the natural oil is excluded. The firm has been able to accomplish this by means of a special arrangement made with the owners of the patents for making salicylic acid. [In our opinion, the artificial oil will in the future displace nearly all the natural oil, and the time is not far distant when the pharmacopœias of the different countries will have to recognize and officially indorse these products, in preference to those obtained from cruder natural sources.] We have already used the synthetic oil to some extent, and can report that it answers every purpose. Experiments are still being conducted to ascertain whether it is equal to the natural oil in its therapeutic properties (as a remedy in acute rheumatism); so far, there is every reason to report that it acts with at least equal promptness, a fact which was to be expected.

Oil of Arnica Root.—This is a new product. It is distilled from the fresh, dried root of Arnica Montana. The yield is 1.06%. It has a light yellow color, and an odor recalling that of radishes. It is not a homogeneous body, but consists mostly of thymohydrochinon-methylic ether, while the aqueous distillate is said to contain isobutyric, angelic, and formic acids.

Besides this the firm has also prepared oil of curcuma, carrot seeds, heracleum fruit, and parsnip seed. All of these are more for scientific than for practical use at present.

Borneol or Borneo-Camphor.—The genuine Borneo-camphor, as is well known, is found in the trunks of *Dryobalanops aromatica*, a magnificent tree growing chiefly upon Sumatra and Borneo. The camphor exists in crystals between the fibres of the wood, and can only be obtained by a total destruction of the tree. It has an odor entirely different from that of ordinary camphor, recalling that of ambergris. For this purpose it is valued highly by Asiatics, and fetches some 50 dollars per kilo, being altogether consumed in the eastern countries.

The fine odor of a sample of borneol which came into the possession of Schimmel & Co. led them to attempt its *artificial* preparation on a large scale. In this they have succeeded, the product being identical with the natural camphor chemically, and nearly so also physically.

[The nature of borneol has been studied by many chemists, and though its exact constitution has not yet been finally settled, yet there are various methods known by which it can be produced artificially.—ED. AM. DR.]

Schimmel & Co. think that borneol will be found a valuable agent in perfumery, in combination with certain other essential oils.

Safrol.—The introduction of this definite odorous principle of oil of sassafras has met with general approval and encouragement. As has already been stated in previous reports, it is obtained from crude oil of camphor by fractional distillation. Schimmel & Co. reckon the yearly consumption of oil of sassafras in all countries at 120,000 kilos, and they will shortly be in a position to produce a quantity of safrol equivalent to the above amount.

Safe Cough Mixtures.—The *Chemist and Druggist* publishes the following formulas for the information of a correspondent who wishes something effectual and cheap. The first is from the pharmacopœia of a children's hospital; the dose, as given, being suitable for a child of about one year old.

I. Paregoric.....2½ minims.
Wine of Ipecacuanha.2½ "
Treacle.....20 "
Peppermint Water to.1 fluidrachm.

II. (For adults).
Tincture of Tolu.....2 drachms.
Paregoric.....1 ounce.
Concentrated Solution of Licorice... .....2 ounces.

[The dose is not given, but we presume it would be a teaspoonful.—ED. AMER. DRUGG.]

New York State Board of Health.—Erastus Brooks, Esq., having died, and Dr. E. M. Moore, resigned, the Governor has appointed Mr. Thomas Newbold, of Poughkeepsie, and Dr. Maurice Perkins, of Schenectady, to succeed them.

The Relative Merits of the Principal Urinary Tests.*

(Continued from page 175 of last volume.)

SUGAR TESTS, CONTINUED.

4. *The Test with Indigo Solution.*

The urine is mixed with much carbonate of sodium, and afterwards with enough of a solution of indigo-blue to give it a distinct blue color. If it is now heated, it will assume a yellowish color if sugar was present; but the blue color will reappear if the urine is shaken with air. To render the test more handy, it was recommended to use two kinds of filtering paper, one impregnated with indigo-solution, and the other with solution of carbonate of sodium. These were to be used so that a piece of the indigo paper was to be immersed in a little water until this acquired the proper tint, when it was to be mixed with the urine. Afterwards it was to be rendered alkaline by adding a piece of the carbonate of sodium paper.

Criticism.—This test is not distinguished either by certainty or by distinctness. In both respects it is far inferior to Worm Müller's or Nylander's methods (described in our last volume, p. 175). It may occasionally serve as a convenient preliminary indicator, if large quantities of sugar are present.

5. *The Picric Acid Test.*

A few drops of solution of picric acid, or a piece of paper saturated with it, are added to the urine, and afterwards some solution of potassa. A deep-red color is stated to indicate sugar.

Criticism.—It remains to be proved that this is a reliable test. As picric acid and potassa alone give already a reddish color, the judgment of the observer, at the best, has to be based upon the depth of tint. Consequently, the test lacks sharpness. A few tenths of one per cent of sugar in urine do not produce a distinct difference from the tint produced without sugar. Though the test appears very convenient, it cannot be recommended.

B. *Other Tests for Sugar.*

The preceding six tests depend upon the fact that sugar has the power of reducing certain inorganic or organic compounds. The following tests are based upon other considerations:

6. *The Test with Solution of Potassa at a boiling Temperature* (MOORE'S TEST).

Mix the urine with solution of potassa, and boil for some time. If the liquid contains sugar, it will turn brown. On acidulating with diluted sulphuric acid, the odor of burned sugar (caramel) will be noticeable.

Criticism.—Though the test may be regarded, in a general way, as *certain* if sugar is present, yet there are other possible (but abnormal) constituents of the urine which may produce a reddish color with potassa (for instance, chrysophanic acid) and which may be the cause of mistakes. On the other hand, the reaction is not sensitive, since even normal urine will turn darker, and if less than one-half per cent of sugar is present, no distinct alteration of the color can be noticed.

7. *The Test with Diazobenzolsulphonic Acid and Potassa* (PENZOLDT'S TEST).

This test was first published by the author (in *Berlin. Klin. Wochenschrift*, 1883, No. 4) and has been confirmed, regarding its reliability, by others.

The diazobenzolsulphonic acid must be freshly dissolved each time the test is to be made. This is best done by adding about sixty parts (by weight) of water to one part of acid, and thoroughly shaking, without warming. If the acid does not all dissolve, the liquid is simply poured off the undissolved portion.

A few cubic centimetres of the urine to be examined are now put into a test-tube, rendered strongly alkaline with solution of potassa, and mixed with an equal quantity of the solution of diazobenzolsulphonic acid, previously likewise rendered very faintly alkaline.

At the same time a parallel test is made with a normal urine of as nearly as possible the same color and degree of concentration. This is used for comparison.

If the urine contained sugar, it will at first assume, under the test, a yellowish-red or bright claret-red color. Gradually, however, this color will deepen, and finally—if much sugar is present—it will become dark-red and opaque. Usually within fifteen minutes—earlier when much sugar is present, and later in the opposite case—the foam on top of the liquid will have assumed a characteristic purplish color, which is seen most distinctly when the foam is shaken. In doubtful cases it is well to allow as much as an hour for the reaction. The color of the foam on the blank sample is only yellow to brownish. In the case of a diabetic urine, the wall of the test-tube is rendered red by the liquid; in the case of a normal urine, only yellow. If strips of filtering paper are dipped into the liquid, they acquire a rose-red tint in that containing the sugar, while they only become yellow in the other. As the red color changes rapidly by exposure to air, it is necessary to make the comparison without delay.

The test may be rendered more convenient for judging the tint, but rather more circumstantial for execution, by using sodium-amalgam at the same time.

Criticism.—The reaction may be considered as reliable, as no other substance likely to occur in the urine under ordinary circumstances has been found to produce the red tint. A few chemical substances, none of which have, however, been as yet found in urine, appear to produce the same reaction, but they may for the present be disregarded. As to the sensitiveness of the test, 0.1 Gm. of sugar in 100 C.c. of normal urine could just be detected yet; 0.2 Gm. was indicated plainly. The test requires, indeed, some practical experience, as well as a careful observance of the blank sample used for comparison. It has, however, one disadvantage. Diazobenzolsulphonic acid is explosive in a dry condition, or when brought in contact with a flame, or by strong blow. If the substance is quite pure, the explosion is not violent. Experience has shown that it is best to preserve it in divided portions of one Gramme each (a quantity which will last a long time), in dark bottles filled with chloroform. When the test is to be used, the chloroform is poured off from the substance in one bottle, a little of the latter transferred to a test-tube, and the bottle filled up again with chloroform. The latter does not interfere with the reaction.

[NOTE of ED. AM. DR.—Diazobenzolsulphonic acid exists in several varieties. That which the author refers to is the *para*-variety. It is prepared and sold, for instance, by Schuchardt, of Görlitz, and sent out by him in bottles filled with chloroform, as recommended by the author. It may be prepared by dissolving para-anilinesulphonic acid in moderately dilute solution of soda, mixing the liquid with a little more than the calculated quantity of nitrite of sodium, and pouring the whole into an excess of cold, diluted sulphuric acid. Its composition is $C_6H_4NSO_3.N$. The acid is in form of small needle-shaped crystals, according to Laar "insoluble in water" (which should evidently be corrected to "but slightly soluble in water"). It should be handled with care. Gaseous ammonia causes the solid acid to explode, as well as heating or strong concussion.]

8. *The Test with Acetate of Lead and Ammonia* (RUBNER'S TEST).

Add an excess of solution of acetate of lead to the urine, filter, add ammonia until a permanent precipitate appears, and warm. After a few seconds, there will appear a rose to flesh colored tint in the precipitate and the liquid.

Criticism.—Rubner states that the test is reliable, as it only occurs with glucose. He states that, if sugar of milk is present, the filtrate will, after protracted boiling, assume a much more intense red color than when glucose is present. As to its sensitiveness, the author claims it to detect as little as 0.1% of grape sugar. Dr. Penzoldt, however, says that even in presence of 0.25% of glucose, the reaction is not always distinct enough. Further study of the reaction is evidently necessary.

9. *The Test with Solution of Subacetate of Lead and Ammonia* (Author unknown).

Add to the urine a few drops of ammonia, and then a few drops of solution of subacetate of lead. Then warm the resulting, curdy, white precipitate short of boiling and avoiding also the evolution of bubbles. If glucose is present, the precipitate will turn flesh-colored to purple.

[NOTE of ED. AM. DR.—This test, like that of Rubner, mentioned under No. 8, is only a refined modification of one known for some time, and which is mentioned by various authors, f. i., Hager in "Pharm. Praxis," II., 855. "Ammoniacal solution of acetate of lead precipitates white 'glucosate of lead,' easily soluble in the precipitant when cold, but separating, upon boiling, with a brownish-red color, and then no longer soluble."] *

Criticism.—In urine free from sugar, Dr. Penzoldt never obtained the reaction; hence he considers it as *reliable.* It is, besides, quite *sensitive*, for a urine containing only 0.2% of glucose gave it with great distinctness. It is easy of execution, though it requires care and some practice.

10. *The Test with Phenylhydrazin and Acetate of Sodium* (JACKSCH'S TEST).

To 50 C.c. of urine add 2 Gm. of hydrochlorate of phenylhydrazin and 1.5 Gm. of acetate of sodium previously dissolved in 20 Gm. of water, and heat the mixture on the water-bath. If sugar is present, a yellow, crystalline precipitate of a substance, termed by E. Fischer (who first discovered it) "phenylglucosaron" will separate in about 10 or 15 minutes; often the precipitate appears amorphous. But, on examination under the microscope, or after recrystallizing from alcohol, the characteristic needle-shaped crystals will be observed.

Criticism.—This test was proposed by Jacksch upon the facts regarding phenylglucosaron published by Fischer. [The latter had already tried to use the reaction for discovering sugar in urine, but as he did not obtain any useful results, he did not publish them.] According to Dr. Penzoldt, the test lacks reliability, since there are other substances liable to occur in the urine which give the same reaction. Besides, it requires so much care and time that it does not appear suitable for practical use.

11. *The Fermentation Test.*

The following method is the most preferable, and may be followed even by the busy practitioner when accu-

* Abstract of a pamphlet by Prof. Dr. F. Penzoldt, of Erlangen, entitled: "Aeltere und neuere Harnproben, und ihr praktischer Werth." (2d ed., 8vo, Jena, 1886). We can recommend this little work to every one who has to make urinary examinations, as being of great practical value.

* Dr. Penzoldt says that he owes the knowledge of this—apparently so far unpublished—reaction to Dr. Dittmer, of Berlin, who saw it in Lüdeke's pharmacy in Berlin. He could not ascertain the author,

rate results are desired. It is necessary to procure a number (at least 3) of so-called fermentation tubes (see cut). These are charged with liquid, in such a manner that the long cylindrical leg is completely filled with it, without a trace of air. In order to have the test fully reliable, it is necessary to charge three tubes at a time as follows:*

1. One with the urine to be examined, to which a small piece of yeast, of about the size of a pea, is added.
2. The second with a solution of glucose in water and a similar piece of the same yeast.
3. The third with normal urine and yeast.

The second tube is intended to prove the effectiveness of the particular yeast employed, and the third is to show that the yeast itself does not contain any sugar. It appears also advantageous to add to the contents of each tube a drop of a solution of tartaric acid. All three tubes are placed at the same time in a moderately warm location (not over 30° C. = 86° F.). After a few hours, the first tube will be found to begin the evolution of gas in the closed limb if sugar was present. If the quantity of the latter was very small, a longer time may be required. While gas collects in No. 1, however, no sign of any must appear in

Nos. 2 and 3. It now remains only to show that the developed gas is carbonic acid. This is done by filling the open, shorter branch of the apparatus with solution of potassa to the very brim, closing the orifice with the thumb, and shaking. On replacing the tube on the table, the gas will have disappeared in the tube, if it was carbonic acid. To make sure that the column of liquid in the closed leg will not give way of itself, mercury may be poured into the cup, in which case the solution of potassa may be introduced into the urine, contained in the long leg, by means of a curved pipette. But neither is absolutely necessary.

Criticism.—The fermentation test is by far the most reliable, and, according to Dr. Penzoldt, sufficiently sensitive, 0.2% of sugar being just recognizable (and even 0.1%, if a larger apparatus is used). The drawbacks are that it requires special apparatus, time, care, and some labor. But, on the other hand, the test is not liable to errors if properly performed, and is therefore to be relied upon.

Summary Regarding the Sugar Tests.

After what has been said, it appears to be unwise to use the indigo test (No. 4), except under certain conditions. For a preliminary examination at the bedside or the consulting room, the most appropriate tests are that with Fehling's solution (either original or modified by Worm Müller), and still more, the bismuth test (No. 3), modified by Nylander. The reaction with basic acetate of lead and ammonia (No. 9) likewise seems to deserve more frequent application. But if all these tests give a doubtful result, then reliance is to be placed upon the *fermentation test* (No. 11).

(To be continued.)

* [Practically, a narrow test-tube or a long homœopathic vial that can be reversed in a small dish of mercury or of the urine to be examined, is all that is essential.—Ed.]

Glycyrrhizate of Quinidine.—Hager has recently suggested a compound of glycyrrhizin and quinidine as a form of administering the latter alkaloid so as to be almost deprived of bitter taste. He gives the following directions for its preparation.

Pour 1,500 parts of distilled water, heated to about 40° C. (104° F.) upon 1,000 parts of peeled Russian liquorice root reduced to small pieces 'intermediate between small slices and a coarse powder;' allow to macerate twelve hours, then transfer the mass to a percolator, and extract it, first, with 1,500 parts of distilled water in which some water of ammonia (70 cubic centimeters for every kilo of liquorice) and 15 parts of effloresced carbonate of ammonium had previously been dissolved. Afterward continue the extraction with distilled water, until the percolate has a pale-yellow color and scarcely possesses a sweet taste. Filter the percolate and mix it, under constant agitation, with a solution of 75 parts of sulphate of quinidine in 500 parts of lukewarm water mixed with 30 parts of hydrochloric acid of spec. gr. 1.124.

Allow the liquid to stand during one hour. Then, if it should have a strongly alkaline reaction, mix it with acetic acid until it is neutral. After a few hours, collect the precipitate upon a strainer, wash it with a little cold distilled water, press it, cut it into pieces of about ⅛ inch thick, and dry them upon plates of porcelain at a moderate heat.

The mother-liquid may be utilized for the preparation of the tannate of quinidine. The yield of glycyrrhizate amounts to about 200 parts. The powdered product has a grayish-yellow color, is not soluble in water, and only slightly so in alcohol. Alkalies and acids decompose it. It has the composition $2C_{20}H_{24}N_2O_2.C_{44}H_{62}NO_{18}.2H_2O$, and it contains 41.09 per cent of quinidine.—*Zeitsch. d. Oest. Ap. Ver.*, No. 31.

Preservatives of Lard.—A series of experiments has recently been made by Mylius, for the purpose of ascertaining the best method of keeping lard from turning rancid. He made a mixture of

Lard, as fresh as possible.....90 parts
Water..... .....10 "

and used this mixture to prepare ointments with various preservatives. After 14 days, a sample was taken from each lot and a definite quantity of solution of iodide of patassium added to each. After 3 hours, the samples were arranged according to the color they had assumed. The following results were obtained:

Preservatives added.	Color of ointment.
1. Glycerin, 10%, Oil Cloves, 0.1%,	white.
2. Oil Cloves, 0.1 and 0.2%,	light yellow.
3. Benzoic Acid (dissolved in the fat), 0.1 and 0.2%,	light yellow.
4. Benzoic Acid (mixed in), 0.1 and 0.2%,	light yellow.
5. Cinnamic Acid, 0.1 and 0.2%,	light yellow.
6. Carbolic Acid, 0.1 and 0.2%,	brown.
7. Creasote, 0.1 and 0.2%,	brown.
8. Oil Wintergreen, 0. 1and 0.2%,	brown.
9. Balsam Peru, 0.5%,	brown,
10. Salicylic Acid, 0.1 and 0.2%,	brown.
11. Boric Acid, 0.1 and 0.2%,	dark brown.
12. Glycerin, 10%,	dark brown.
13. Without preservative,	dark brown.

After 1 day, 4 weeks, and 2 months, respectively, the same results were obtained.

All experiments made since then have shown that oil of cloves answers the purpose best. And even benzoic acid will answer if it was dissolved in the fat by melting.

It remains, however, to be ascertained why these substances retard the absorption of oxygen by the fat.—After *Pharm. Centralh.*

Tribromide of Allyl as a Nervous Sedative.—Tribromide of allyl was first obtained by Ad. Wurtz, by acting upon iodide of allyl with 1⅓ times its weight of bromine. It is a colorless liquid, very soluble in ether, boiling at 217° C. (422° F.), solidifying at −10° C. (14° F.), and having the specific gravity 2.436.

Dr. Fleury has found that this substance is a powerful nervous sedative. It retards or suspends the convulsions produced by picrotoxin and strychnine. Taken by itself, it produces a sort of intoxication with great lassitude, but is not fatal, at least in small doses.

The author has used the drug with good success, both hypodermically and by the mouth. For hypodermic use, 2 to 3 drops are dissolved in 15 to 30 min. of ether and injected, but the injection causes pain, probably due to the ether. The internal administration is best accomplished by giving it in doses of 5 drops (equivalent to about 2 grains), contained in capsules, of which one or two may be given 3 or 4 times in 24 hours. The affections in which Dr. Fleury has used the drug so far are hysteria, asthma, whooping-cough, angina pectoris, infantile convulsions, gastralgia, and neuralgia.—*Journ. de Méd. de Paris.*

Infusorial Earth as a Vehicle for Acids, etc.—*Kieselguhr*, a soft friable deposit found in various localities and consisting almost entirely of the siliceous shells of infusoria, has been long in use as an excellent absorbent for certain liquids. Saturated with nitroglycerin it forms one of the varieties of dynamite, in fact the first dynamite was thus prepared. Bromine sticks have been introduced by Dr. Franck, being kieselguhr containing a definite proportion of bromine, and compressed into sticks.

Sulphuric acid is now put up in this manner by Vorster and Grüneberg, of Cologne. Kieselguhr can take up between 5 and 6 times its own weight of the acid, without appearing wet or moist. In this form it is likely to be applicable to many purposes, such as filling exsiccators, drying cylinders for gases, etc.—*Polyt. Notizbl.*

[See also p. 49 of AMER. DRUGGIST for 1885.]

Discovery of Cobalt Mines in Queensland.—Cobalt ore has recently been found near Kilkivan, in the Wide Bay District of Queensland. The ores of this metal were hitherto unknown in the colony, although the neighborhood of Kilkivan was known to be rich in mineral products, including gold, silver, copper, mercury, and lead. Mr. F. Smith, who discovered the deposits under notice, reports that they come under the designation of earthy cobalt, and were mixtures of cobalt, nickel, iron, manganese, and copper, in somewhat variable proportions. They are ten miles distant from Kilkivan itself; the reef or lode of the ore now being opened is situated in one of the spurs near the heads of the Wide Bay Creek, and between the tributaries of that water-course known as Fat Hen and Copper Mine Creek. The reef measures twenty-one feet in thickness, but it is not claimed that the whole of this is cobalt ore of the best quality. It is said that the Queensland ore contains no less than twenty-two per cent of cobalt, which, if true, would render it more valuable than any other cobalt now in the market, as the average yield of the commercial

cobalt does not exceed from two to ten per cent. Cobalt is a mineral of which the price, to a great extent, depends on its supply, and the latter has hitherto been small; but no doubt with a greater output fresh uses for cobalt will be discovered and the mineral become more valuable. The existing statistics of the production of cobalt in many cases give the ore as of nickel and cobalt. In the United States, in 1882, the value was £3,000, but the quantity raised was not stated. In Germany, in 1881, the statistics gave 191 tons, value £13,005, equal to £68 per ton; in Spain, in 1882, 40 tons, value £1,046; equal to £26 per ton; in Norway, in 1879, 108 tons, value £11,112 or £103 per ton; and finally Sweden produced an average quantity of 153 tons per annum during ten years. The value of the ore of nickel and cobalt was given variously as from £40 down to £4, according to quality and locality. Kilkivan is situated in the Wide Bay district of Queensland, to the northwest of Brisbane, at about 26° S. Lat. and 153° W. Long. The Kilkivan branch of the Maryborough and Gyrespill Railway, which is about to be completed, will open up the district to commerce.—*Chem. and Drugg.*

The Salt Mountain of Palestine.—U. S. Consul Merrill states that this mountain is situated at the south end of the Dead Sea. Its length is six miles, width three-quarters of a mile, and height not far from 600 feet. The mass of the mountain is composed of solid rock salt, some of which is as clear as crystal. How far this deposit of salt extends below the surface of the ground no one at present knows. This salt and that obtained from the Dead Sea are a Government monopoly. Consul Merrill believes there is a mine of wealth in the mountain, and if capitalists were allowed to work it, the prosperity of the country would be greatly increased.—*Chem. and Drugg.*

Removal of Arsenic from Hydrochloric Acid.—F. J. Otto found that it is impossible to deprive *pure* hydrochloric acid of all traces of arsenic which it may contain, by means of hydrosulphuric acid. This has been confirmed by others. But Dr. Bannow has observed that *crude* hydrochloric acid may thus be freed from arsenic, the probable reason being, that the crude acid contains constituents which facilitate the reaction. According to him, the purification is performed in the following manner:

The *crude* hydrochloric acid is first diluted, if necessary, to the spec. gr. 1.12, and a current of hydrosulphuric acid gas is then passed through it under constant agitation, until the acid retains the odor of it. It is then set aside for twenty-four hours at a temperature of 20°-30° C. (68°-86° F.), then again saturated with the gas, and this process repeated in intervals of twenty-four hours, until the acid permanently retains the odor of the gas. It is then set aside to clarify, then carefully decanted, filtered, and the filtrate, which is now absolutely free from arsenic, distilled. The first portions which have the odor of hydrosulphuric acid, are caught separately and rejected. The next portion is received as pure acid, and this usually continues until the liquid has been reduced to one-tenth.—*Chem. Zeit.*

Estimation of Urea.—One of the most frequently employed, modern methods of estimating urea is that by the volumetric determination of the nitrogen given off by urine when treated with an alkaline hypobromite. F. Schenck has recently made a critical examination of this method, when he found that it generally indicates much more nitrogen than the urine contains. Hence he considers it unsuitable for estimating either the urea, or the total nitrogen in urine.

Note.—Nevertheless, if the hypobromite solution has been standardized upon a solution of pure urea of known strength, and the conditions under which the experiments are made are as nearly alike as possible, the results will be sufficiently correct for practical purposes.—ED. AM. DR.

Pflüger and Bohland describe a method for the rapid estimation of urea, which is especially suitable as a preliminary test before executing one of the exact but more tedious methods.

It is a modification of Liebig's volumetric method. Mix a small quantity of bicarbonate of sodium with water to a thick magma, and place a series of drops of this mixture upon a plate of glass. Next measure 10 C.c. of urine into a beaker, and allow a solution of mercuric nitrate (containing 77.2 Gm. of pure mercuric oxide, dissolved in the smallest necessary quantity of nitric acid and enough water to make one liter) to run into it from a burette in quantities of only two or one cubic centimeters at a time. Remove a drop now and then, and place it upon one of the drops on the glass-plate. As soon as a permanent yellow-color is thereby produced, the number of cubic centimeters of mercury solution is read off. This figure, multiplied by 0.04 gives the percentage of urea in the urine with a probable error of ± 0.15 per cent.—After *Zeitsch f. anal. Chem.*, 1886, 601.

Sugar of Milk as Tooth-Powder.—According to a communication in the *Pharm. Zeitung*, sugar of milk is said to be preferable to all other kinds of tooth-powders usually employed. It is said to cause the calcareous deposit between the teeth to become detached after a short time. In applying it by means of a tooth-brush, it is recommended to brush it from the gums to the extremity of the teeth both in the upper and the lower jaw, and the tooth-brush should be a soft one.

[Teeth rapidly decay under the influence of minute germs which grow in an acid medium. So long as the liquids in contact with the interior of the mouth are alkaline, the teeth will do well. The products of sugar fermentation are acid, and it is a long-recognized fact that the residue left between the teeth of those who eat candy favors rapid decay. To deliberately *use* sugar as a dentifrice would be idiotic.—ED. AM. DR.]

Sulphurized Suint.—According to M. Rohart, the grease of sheep's wool, at the temperature at which it melts, very readily absorbs certain sulphur compounds (*Nature*, September 30th, p. 531). For instance, it will fix as much as one hundred times its volume of sulphuretted hydrogen. After this treatment, it is easily saponifiable in the cold state, by simply treating it for less than an hour with an alkaline carbonate, caustic alkali not being required. This treatment is said to be applicable to all kinds of fat when sulphurized. M. Rohart recommends a sulphurized soap prepared from suint for use in vine cultivation.—*Pharm Journ.*

[Probably a soap of this kind could also be prepared for the treatment of certain skin diseases. It might take the place of such soaps or salves in which the sulphur is present in a free state.—ED. AM. DR.]

Rectal Injections of Medicated Gases.—The treatment of pulmonary phthisis with rectal injections of medicated gases has been reported upon favorably by Dr. Bergeron (*Brit. Med. Journ.*, October 2d, p. 651). About four or five liters of carbonic-acid gas is passed through one quarter to half a litre of a mineral water containing sulphur and then introduced into the rectum, two injections being made in the course of twenty-four hours. After two days of this treatment, cough is reported to have been cured, expectoration modified in quantity and character, profuse perspiration stopped, and the general condition improved, even in cases in the confirmed stages of phthisis.

The Sweetening Power of Saccharin has been the subject of recent experiments by C. J. S. Thompson, of Manchester, Eng., who communicates the following results to the *Pharmaceutical Journal*. A one-per-cent solution in hot water, although very sweet to the taste, has a flavor distinctly different from that of cane sugar. Ninety minims of this solution, added to one containing four grains of quinine sulphate, quite masked the bitter taste of the latter and rendered it palatable. Thirty minims of the same solution sweetened half a drachm of tincture of iron, and it required twenty minims to cover the salt taste of ten grains of bromide of potassium.

Action of Light on Ferments.—*Nature* (October 7th) says that the results of experiments by Dr. A. Downes on the effects of exposure to sunlight upon ferments seem to have a direct bearing upon the various physiological ferments commonly met with in pharmacies. Active solutions of malt diastase, pancreatic diastase, and trypsin became inert after exposure in half-filled flasks for one month to sunlight. A solution of pepsin was similarly affected, although the pepsin was not so well prepared as desirable. Rennet, although its properties were enfeebled, retained some characteristic properties after the month's exposure. In control experiments in flasks kept in the dark, the ferments remained active.—*Pharm. Journ.*

Excessive Irritation of the Skin due to application of tincture of iodine, whether owing to the presence of acetone in badly rectified spirit or to sensitiveness of the skin, may be immediately relieved, according to Mr. Carles (*Journ. Pharm.*, Oct. 1st, p. 315), by applying alkalies and alkaline salts. Dilute ammonia or soda crystals may be used with robust skins, and alkaline sulphites, bisulphites, or hyposulphites when the skin is delicate. Best of all is a one-per-cent to ten-per-cent watery solution of sodium sulphydrate. This may likewise be employed for removing iodine stains.—*Pharm. Journ. and Trans.*

The California College of Pharmacy held its fourteenth annual commencement exercises on Nov. 17th, and granted diplomas to F. T. Bond, F. M. Boswell, F. O. Bratton, A. A. Drossel, T. H. Hughes, S. F. Hughes, E. J. Molloney, C. L. Morgan, and E. E. Skinner. Messrs. Bratton and Skinner received prizes.

THE Spanish Ministry of Justice has arranged for the establishment in Madrid, Barcelona, and Seville, of laboratories of forensic medicine. After the middle of September, analyses which may be ordered by magistrates will be conducted in the new institutions—a provision enabling experts nominated in the interests of accused persons to be present during the performance of such analyses.

It is reported than an American whaling vessel captured in Suez Bay, during a recent cruise among the West Indies, a whale from which thirty pounds ($10,000 worth) of ambergris was taken.

BIBLIOGRAPHY.

AMERICAN MEDICINAL PLANTS: An Illustrative and Descriptive Guide, etc. By MILLSPAUGH. Boericke & Tafel, New York and Philadelphia.

THE fifth fasciculus of this serial, just issued, contains illustrations and text of the following subjects: *Aesculus glabra, Absinthium, Ambrosia, Anagallis, Aryemone, Artemisia vulgaris, Arum dracontium, Chenopodium anthelminticum, Cistus, Collinsonia, Convolvulus arvensis, Euphorbia hypericifolia, Euphorbia lathyris, Helonias, Humulus, Hydrophyllum virginicum, Hypericum, Lachnanthes, Lactuca, Leptandra, Lilium superbum, Lycopus, Purtherum, Phaseolus, Polygonum acre, Ptelea, Ranunculus sceleratus, Salix purpurea, Sinapis alba, Solanum nigrum.*

Like the parts which have preceded it, this one is issued in portfolio. The sixth and final portion is announced as well advanced towards completion. Each part costs six dollars, and the whole will form one of the most beautiful publications of this character which has appeared in this country.

MANUAL FOR THE USE OF BOARDS OF HEALTH OF MASSACHUSETTS, containing the Statutes Relating to the Public Health and the Decisions of the Supreme Court of Massachusetts Relating to the Same. Prepared by Direction of the State Board of Health. Boston: 1886, pp. 117, 8vo.

ACCORDING to this very comprehensive *resumé*, registration of vital statistics appears to have been first established in Massachusetts by a colonial law of 1639. The compilation of similar laws enacted since has been made up to 1882 by Mr. George F. Piper, and to this work the subsequent laws have been added and the whole rearranged as far as needed.

PAPERS IN PENOLOGY. Reformatory Press, Elmira, N. Y., pp. 112, 12mo.

THIS pamphlet contains eight papers on subjects connected with prison management and the moral reformation of prisoners, and is an example of the handiwork of inmates of the State Reformatory in Elmira, N. Y.

THE HEALING OF ARTERIES AFTER LIGATURE IN MAN AND ANIMALS. By J. COLLINS WARREN, M.D., Assist. Professor of Surgery, Harvard University; Surgeon to the Massachusetts General Hospital, etc. New York: William Wood & Co., pp. 184, 8vo, 12 plates. $3.25.

THE author has brought together into one monograph the results of much labor which has been heretofore directed towards the solution of the various phases of this subject, and has combined, with these materials, his own extensive observations conducted in the pathological laboratory of Harvard University. The whole has been published in elegant fashion.

THE PACIFIC RECORD OF MEDICINE AND PHARMACY.

THE first number of this new monthly publication was issued on the 15th of August, in San Francisco. Charles W. Moore, M.D., is the editor. It covers thirty-two pages with text, of which four are in Spanish. The first number is a very creditable production indeed, and the journal is worthy of a liberal support.

THEO. RICKSECKER, PERFUMER, pp. 68, 12mo.

THIS is a pretty publication by the well-known New York manufacturer, who always shows taste in whatever he does. It is mainly descriptive of the various packages in which his wares are offered to the trade.

ANNUAL REPORT of the Chief of the Bureau of Statistics on Foreign Commerce of the United States for the year ending June 30th, 1886. Washington, pp. 99, 8vo.

THE MEDICAL RECORD VISITING LIST OR PHYSICIAN'S DIARY, for 1887. New York: William Wood & Co.

THIS visiting list is unquestionably the handsomest and most comprehensive of any that we have seen. Seventeen pages are devoted to such facts as physicians are liable to require information upon in emergencies. The record of attendance upon patients is calculated for 30 or 60 per week, according to the size of the book. Special pages are provided for records of births, deaths, vaccinations, consultation appointments, addresses, cash accounts, etc. The work sells for $1.25 to $1.50, according to size.

The Calendar for 1887, issued by the Pope Manufacturing Co., of Boston, New York, Chicago, and Hartford, illustrates the "Columbia" bicycle and tricycle made by this firm. The design is handsome and the coloring is very rich and attractive.

INFORMATION on Newer Materia Medica, Standard Medicinal Products, Fine Pharmaceutical Specialties, Properties and Doses of Drugs. Epitomized for the use of the Busy Practitsoner. Fourth Edition; revised and enlarged. PARKE, DAVIS & Co., Detroit, Mich., pp. 76, 8vo.

THIS trade circular contains much information in brief, and is fairly representative of the industry of this enterprising firm.

RECHERCHES DES FALSIFICATIONS DE DEURÉES ALIMENTAIRES. Au Point de Vue Légal. Pp. 11, 8vo.

LES ANCIENS GRÉS ARTISTIQUES FLAMANDS dans le Nord de la France, à la fin du XVIIe Siècle. Pp. 25, 8vo, with two tables and a colored plate.

INSTRUCTIONS SUMMAIRES POUR LES AGENTS DE LA POLICE RÉPRESSIVE en Matière d'Exercise Illégal des Professions Médicales. Pp. 45, 8vo.

THE author of the above, Dr. S. A. Van Bastelair, of Mons, is a member of the Royal Academy of Medicine, President of the Belgian Pharmaceutical Association, and Honorary President of the Pharmaceutical Society of Charleroi. He has been a voluminous writer, not only upon subjects connected more or less directly with pharmacy, but likewise upon historical and archeological subjects.

TRANSACTIONS OF THE AMERICAN OTOLOGICAL SOCIETY. Nineteenth Annual Meeting, July 20th, 1886. Vol. III. Part 5. Published by the Society, 1886. Pp. 196, 8vo.

THE series to which this publication belongs is highly prized by all who give attention to diseases of the ear. This number contains several valuable papers and a very comprehensive alphabetical index to the otological literature of the preceding year.

PROCEEDINGS of the North Carolina Pharmaceutical Association, at its Seventh Annual Meeting, held at Fayetteville, N. C., Aug. 11th and 12th, 1886, etc., etc. Pp. 126, 8vo.

WE are indebted to Mr. Jas. C. Munds, of Statesville, N. C., for this report of the work of his association.

PROCEEDINGS of the Georgia Pharmaceutical Association, at the Eleventh Annual Meeting, held in Savannah, Ga., April, 1886, etc., etc. Pp. 40, 8vo.

TO Mr. H. R. Slack, Jr., of LaGrange, we are indebted for the above-named publication.

PROCEEDINGS of the Illinois Pharmaceutical Association at his Seventh Annual Meeting, held in Rockford, June 8th, 9th, and 10th, 1886, etc., etc. Pp. 199, 8vo.

THIS voluminous report has been very ably edited by Mr. Albert Ebert, of Chicago, and is sent to us by the Secretary, Mr. L. C. Hogan, of Englewood, Ill.

MARTIN'S DRUGGIST'S DIRECTORY of the United States and Canada, 1886–7. Containing Lists of the Wholesale and Retail Druggists, and various branches connected with the Drug Trade. New York and Boston: 1886, pp. 313, 8vo. $2.50.

THIS excellent directory, formerly published by Chas. S. Martin, is now the property of the Advertiser Publishing Co., E. A. Jones, Manager, 5 Beekman street, New York, and 105 Sumner street, Boston, Mass. This fourth edition is in many respects an improvement on its predecessors and is an indispensable work of reference for all persons in any way connected with the drug business. As a reliable guide it is the best in the market.

PROCEEDINGS OF THE OHIO STATE PHARMACEUTICAL ASSOCIATION at its Eighth Annual Meeting, held in Springfield, June 2d, 3d, and 4th, 1886. Together with the Constitution, By-Laws, and List of Members, 1886, pp. 161, 8vo.

THE published proceedings of this body show its continued prosperity, and that the business transacted was fairly representative of the state of the drug trade and of pharmacy in Ohio. The volume is nicely published in muslin covers, with good type and paper, and can be bought of the Secre- Mr. Lewis C. Hopp, of Cleveland, for fifty cents.

MANUAL OF PHARMACEUTICAL ASSAYING. Including Details of the Best Methods of Determing the Strength of Crude Drugs and of Galenical Preparations. Designed especially for the use of the Student and of the Practical Pharmacist. By A. B. LYONS, M.D. Detroit: D. O. Haynes & Co., 1886, pp. 151, small 8vo.

MUCH need exists among American pharmacists for a work such as Dr. Lyons now offers to them, for the increasing demand for pure drugs and the increase of competition, which tends to depreciate their actual value, renders it more obligatory than ever that the pharmacist should be able to form some estimate of the real nature of his wares. The author is eminently competent to prepare a practical guide of this nature, and so far as we are able to judge from an examination of this work, it is worthy of him. It contains most of the recent advances made in this branch of chemistry, and is issued in excellent form. Sent by mail to any address on the receipt of $1.25.

CHEMICAL LECTURE NOTES. Taken from PROF. C. O. CURTMAN'S Lectures at the St. Louis College of Pharmacy. By H. M. WHELPLEY, Ph.G., Quiz-Master of Chemistry and Pharmacognosy in the St. Louis College of Pharmacy. St. Louis, Mo.: Published by the Author, 1886, pp. 143, 8vo. Price, $1.00.

THE first 84 pages are devoted to chemical physics, a branch in which most students of medicine and pharmacy are deficient. The remainder relates to chemistry proper. The whole is intended as an outline of studies which should be essential in the curriculum of students in colleges where chemistry and pharmacy are taught. Numerous illustrations are provided, and the text is sufficiently in detail to render the subject comprehensible without increasing the size of the work beyond appropriate limits.